

# Why the Lion Reintroduction Project ?

Manoj Mishra\*

Isolated populations of endangered species are at much greater risk compared to populations that are well-distributed. The risk is even more acute if the species in question survives as a single, small population confined to a single locality. Currently Asiatic lions (*Panthera leo persica*) are up against precisely such odds. Once widely occurring in India in the northern semi-arid scrub-grassland habitats from west to east and other arid scrub areas in the peninsula, the Asiatic lion rapidly started losing ground to diversion and degradation of its natural habitat by extension of human settlements, as well as overuse and abuse. The constraining impact of shrinkage, fragmentation and degradation of lion habitats was compounded by the pressures of uncontrolled hunting, predominantly by British "sports" hunters as well as Indian maharajas, which left lions at the brink of extinction at the turn of the 19th century. The very early decades of the 20th century marked the lowest ebb in the Asiatic lion population, which then was limited to Gir forests of the erstwhile Junagarh princely state in Gujarat. This was its last resort, when fewer than 30 individuals were believed to have survived.

Since then, this last remnant population has been jealously guarded and in the preceding three decades has been backed by good conservation action. This effort pulled the Asiatic lion from the jaws of extinction. This only free-ranging population of the subspecies currently stands at around 350 individuals, all confined to the Gir Conservation Area (GCA) in Gujarat. The GCA comprises Gir National Park (259 km<sup>2</sup>), Gir Lion Sanctuary (1,153 km<sup>2</sup>), and some adjacent scrub-grassland and open forest areas a little over 100 km<sup>2</sup> in extent. The commitment and the effort hereto of the State Government of Gujarat and its Forest Department in protecting the Asiatic lion deserve much praise. That commitment is not likely to weaken, despite frequent conflict arising from lion-kills of livestock. Reinforcing this commitment is the recently well-recognized crucial aquifer value of the GCA to this semi-arid and drought-prone region. However, the surrounds of GCA are well populated and have witnessed consistent upgrading of agricultural practices, which do not present a very compatible interface for such a critically important conservation area.

## The critical urgency of starting a second Asiatic lion population

The survival of Asiatic lions in the wild, therefore, cannot be taken for granted. The small population size, coupled with their 'single population' status (GCA is but 1,500 km<sup>2</sup> only with 1,432 km<sup>2</sup> of protected area status) exposes them to a variety of threats such as epidemics, natural calamities and forest fires. In fact the African lion population<sup>1</sup> of Serengeti National Park in Tanzania was left

severely depleted as a result of an outbreak of canine distemper virus in the early 1990's. It is believed that 75% of the lions had been infected and at least 30% of the population was wiped out by the infection. If an epidemic of such proportions were to affect the lions of Gir, it would be very difficult to save them from extinction, given the much smaller size of Gir and also the relatively smaller lion population. Genetically speaking, earlier the rapid decline in Asiatic lions occurred in the late 19th and early 20th century in a short time-span and even the small remaining population must have carried substantial proportions of the original genetic attributes. This allowed it to recover, given good conservation support. If such a crash occurs now, the genetic viability of the population will take a serious hit, imperiling its long-term survival. This calls for urgent measures to initiate action for establishing and nursing a second, and later perhaps, a third or fourth such population of Asiatic lion.

In response to consistent conservation inputs, the lion population in the GCA registered steady growth until late 1980's-early 1990's. But this has tapered off lately, primarily constrained by the non-availability of additional habitat and the limited scope of enhancement in the productivity of the existing habitat. Biologically speaking, the GCA now carries a near saturation level of the Asiatic lion. Yet the Gir population is dynamic and potentially capable of yielding breeding surpluses; there would be sufficient potential stock for supplying additional suitable habitats if available in the locality or elsewhere. Indeed such removals for reintroduction elsewhere will not only lead to long-term security of the Asiatic lion through two (or more) separate populations, but the voids created in the presently saturated Gir population would give it a breeding impetus and thus enhance its vitality.

## Initial preparatory effort towards a second population

It was therefore proposed to establish an alternate free-ranging population of lions so as to insure against the threat to the Gir population. This would involve translocating a few lions from Gir to the alternate site. Such a site first had to be identified. Research projects by the Wildlife Institute of India (WII) in Gir produced data for better management of the species in Gir and also generated indicators for selecting the alternate site. Following the

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<sup>1</sup> African lions are a distinct sub-species found in relatively greater abundance in the African savannah, forests and deserts.

\*Director, PEACE Institute and Charitable Trust, New Delhi. [manojmishra@peaceinst.org](mailto:manojmishra@peaceinst.org), [www.peaceinst.org](http://www.peaceinst.org)

Population and Habitat Viability Analysis (PHVA) Workshop for Asiatic Lion (facilitated by the IUCN SSC Conservation Breeding Specialist Group, CBSG, India (now CBSG, South Asia) and Zoo Outreach Organisation) held in Baroda in 1993, the forest departments of Gujarat, U.P., M.P., Rajasthan and Haryana were asked to draw up a list of protected areas in their respective states that could potentially serve as a second home for lions.

A team of scientists from WII short-listed three areas: Darrah - JawaharSagar and Sitamata Sanctuaries in Rajasthan and the Kuno Sanctuary in MP. A rapid assessment of these sites was carried out during 1993-94, principally on the following counts - extent of forest area, quality of habitat, prey base availability and presence of human population. While Darrah was found unsuitable on account of its small size and the degraded state of habitat, Sitamata was ruled out on account of lack of prey and extensive human interference. Kuno emerged as potentially the most viable option for this prospective novel translocation attempt. Human pressure in Kuno was considered manageable and the habitat fairly healthy and suitable. Further, surrounding the sanctuary, there is roughly 3000 km<sup>2</sup> of contiguous forest that can potentially sustain a growing lion population. Historically, this tract is believed to have had an overlapping distribution of lion and tiger. Much of tiger range occurred to its southeast in the relatively more moist deciduous forests and that of the lion to the relatively drier scrub-savanna areas to its east, northwest and southwest. From the point of view of forest formations and hence with respect to 'shelter', Kuno and Gir are not too different, though the vegetation composition in Kuno is potentially more productive for herbivore prey. This attribute and its situation within a more extensive forested tract, give Kuno an enhanced potential quality as an alternate home for the lion.

Thus, admittedly, while Kuno appeared to be the most suitable place that could hold an alternate lion population, the following prerequisites, as identified in the WII report, first had to be met before the actual translocation of the carnivores was allowed to take place:

1. A long-term commitment of resources and personnel on part of the concerned authorities, namely, the Gujarat Forest Department, the M.P. Forest Department, the Government of India and the Wildlife Institute of India.
2. Relocation of the human population living inside Kuno sanctuary so as to minimize the probability of conflict between humans and lions.
3. Socioeconomic assessment of the people living on the periphery of the sanctuary in order to understand their current level of dependence on the bio-resources of the sanctuary.
4. An 'ecodevelopment' plan for the people living in the villages in the surrounds of the sanctuary would

- be developed based on the socio-economic assessment and the extent, distribution and potential of forests and 'village commons' outside the sanctuary. This eco-development plan aimed at promoting a sustainable and compatible interface between them and the sanctuary shall cover all people living and using the proposed conservation unit of about 3000 sq km. Establishment of a direct linkage between their (local people) improved standard of living and the lion project would be crucial for the long-term success of the project.
5. An awareness campaign on the proposed lion translocation to prepare the people in the vicinity of the sanctuary to live with a mega-carnivore like the lion, an animal that they have not encountered before in living memory.
  6. Delimitation and declaration of the core area to be established as a National Park.
  7. A select team of forest department personnel would have to be identified and trained for this specialized task.
  8. The habitat would have to be protected, in some cases perhaps even helped by judicious interventions, in order to promote growth of herbivores for prey. If need be, in order to accelerate the process of building up prey populations, some wild herbivores may have to be transferred to the sanctuary from other protected areas/forests in Madhya Pradesh.
  9. Initiation of a monitoring and research programme from the very start of the project.
  10. Once the habitat at Kuno has been adequately developed and secured, 5-8 adult lions (2-3 males and 3-5 females) and their dependent young would be translocated from Gir during the cool season. Adequate arrangements would have to be made for pre-release captivity in order that the lions acclimatize to their new surroundings prior to release.
  11. The above lion population can be supplemented with animals captured from the fringes of Gir, from time to time. This would add to the growth of the initially introduced population and it may be possible to achieve a free ranging population of 30-50 lions within first 10 years of the initial release of lions in Kuno.

Each of these involved a number of sub-tasks and the MP forest department, on the basis of the WII report, prepared a document that outlined all the sub-tasks and proposed a time schedule for completing these. It also provided budget estimates for implementing these proposed activities.

#### **The Plan**

The plan prepared by the Madhya Pradesh (MP) Forest Department, in late 1994, required the Central Government to commit resources to the tune of INR 64 crores (12 million Euro) over the twenty year period from 1995 to 2015. The Ministry of Environment and Forests has since been funding the project on the basis of annual plans as received from the government of MP.

**Progress till date:**

With assistance to the tune of INR 15 crores from the Government of India, a twenty-year project was initiated by the government of MP in 1995, to establish a disturbance-free habitat in Kuno Sanctuary. Between 1996 and 2001, twenty-four villages, with about 1547 families, have been relocated from the Sanctuary by the Madhya Pradesh Forest Department. The Madhya Pradesh Government has also demarcated a 1280 Km<sup>2</sup> Kuno Wildlife Division encompassing the Sironi, Agra and Morawan forest ranges around the Sanctuary. (WII, 2005)

**The Gaps:**

Major gaps remained even by 2005 which were assessed by a PEACE Institute team and a project was drawn up to attempt to address them, at least in part, through an ecological monitoring project which shall be described subsequently. The major gaps observed by the team are listed below:

1. Lack of widespread ownership The larger project, approved by the Central Government in 1994-5, for its successful planning and implementation requires the commitment of the two State governments of Gujarat and Madhya Pradesh and of the Central government. This commitment has to hold on a long term basis and must cover the project's objectives, fiscal resources and operational mechanisms right from planning to culmination of implementation leading to the setting up of a viable second population of Asiatic lion. The project besides has several actors and stakeholders on the professional and local livelihood fronts. It must have active participation of the protected area managers at different levels, wildlife management experts including those specializing in safe capture, transport and release of animals, veterinary doctors, animal trackers, habitat managers etc. The local people at the site for the second home of lions are bound to have the strongest stake as this has already involved relocation of villages to places outside the Kuno sanctuary. This has raised the issues like the adequacy of size and quality of new land holdings, and other timely support for the sustenance of on-farm and off-farm livelihoods as well as housing at new sites. There are other significant stake-holders, including local communities (other than those relocated), politicians and various government agencies in the field of education and rural development and NGOs.

2. Low project profile Considering the uniqueness of the project, it does not appear to have caught the imagination of the wildlife conservation fraternity, and indeed the society in general. This is reflected in the somewhat lukewarm attitude of the concerned government agencies towards it. This is symptomatic of the "conservation apathy" that the lion suffers from when compared to its more glamorous feline cousin, the tiger.

3. Absence of ecological research programme Lack of ownership has lent to the project a rather lopsided character, with only the village relocation component having received any sort of attention. While this component has nearly reached its culmination, the critical research programmes in the sanctuary have yet to start. Such programmes shall have to address, among other things estimating the size, and dispersal patterns of the prey populations in the sanctuary. This information is critical in order to decide whether the sanctuary is ready to receive and host a lion population.

4. Enhancement of staff capacity: As identified in the WII report, capacity of the staff of Kuno sanctuary will need to be considerably enhanced for them to be able to handle a multi-faceted project as the one being implemented. In particular, they will need significant skill enhancement in animal tracking, behavioural studies, census techniques, habitat-restoration/improvement, habitat monitoring and so on. This continues to be an area that remains unattended.

**Ecological Monitoring Project - Objectives**

Now that the first stage of the project involving the relocation of the villages from within the sanctuary has been implemented, it is necessary that a regular and long term ecological monitoring of the sanctuary is carried out with the following objectives:

- a) Create an ecological baseline on parameters such as vegetation, other habitats, spatio-temporal water availability, air quality, climatic characteristics etc in the sanctuary against which future changes could be assessed.
- b) Observe, document and disseminate information on the ecological changes taking place in areas that once housed the villagers and their agricultural fields. Help devise a management package to maintain and augment habitat productivity without overt interventions.
- c) Conduct a systematic monitoring of the population changes and ranging patterns of herbivores like nilgai, chinkara, chital, wild boar etc in the sanctuary and mark out segments of crucial seasonal habitats for close management attention including judicious water facilitation.
- d) Conduct monitoring of tiger presence / movements in the sanctuary and study relative interface between tiger and lion when the latter are introduced and become naturalized.

In addition to above, the centre should also strive for the following:

- e) Start a capacity enhancement (of the local staff) effort so that once the target species is brought in all key players are in readiness and competent to deal with any emergent exigency.
- f) Facilitate educational and outreach programmes including publications in collaboration with experts in the vicinity of the sanctuary and elsewhere to build local as well as countrywide appreciation and ownership of the entire programme.

## Tasks, Activities and Methodologies

### **I - ESTABLISHMENT OF BASELINES (Refer Objective 'a')**

#### **a) Databasing climatic parameters in the sanctuary**

Purpose: To establish critical climatic baselines (Rainfall, temperature, humidity, air quality, water tables etc) in the area to monitor and compare future changes if any)

Methodology: Access relevant (monthly) information from published and reliable unpublished sources for incorporation in a database format. In due course a weather station is proposed to be set up as part of the Research station.

#### **b) Habitat mapping of the sanctuary into woodlands, grasslands, wetlands and other lands**

Purpose: To establish baselines as also determine parallels with the Gir Lion Sanctuary and locate most suitable habitats for the Lions once they are in the sanctuary)

Methodology: Existing habitat maps of the sanctuary shall be accessed from various sources including the Wildlife Institute of India (Dehradun) and validated in the field. In due course GIS based habitat map/s is proposed to be developed.

#### **c) Listing of key floral elements in the park**

Purpose: To establish floral baselines and to determine similarities or otherwise with the floral composition found at the Gir National Park)

Methodology: A floristic inventory including a herbarium of the sanctuary shall be prepared. Care shall be taken to document presence of invasive if any.

#### **d) Faunal characteristics of the sanctuary including assessment of tiger presence and areas frequented by it (Refer Objective 'c' and 'd')**

Purpose: To establish the abundance and suitability of prey base in the sanctuary for the lions and to determine tiger 'dominated' areas within the sanctuary so as to suggest tiger - lion buffer areas to avoid any inter specific conflicts during the initial establishment phase for the lions in the sanctuary)

Methodology: Regular monitoring of herbivore populations in the sanctuary using fixed transects animal presence / sighting documentation protocols. Identification, monitoring, utilization patterns of the suitable habitat in the sanctuary by tiger and estimation of tiger numbers using a predefined set of presence/absence indicators and preparation of a tiger preferred habitat mapping.\

### **II - ECOLOGICAL MONITORING OF FORMER HUMAN HABITATIONS (Refer objective 'b')**

#### **a) Determine the state of lands and their current usage by the wild ungulates**

Purpose: to determine the state of 'assimilation' of the former human habitations into the wider

sanctuary landscape)

#### **b) Monitor the vegetational succession as it takes place in the former human habitations and its usage by the wild ungulates**

Purpose: To document the natural succession and suggest steps if any to expedite the process so that the areas become better integrated and available both to wild ungulates and to the lions in due course of time)

Methodology: Document the process of reversion of past human occupied lands into wilderness areas (woodlands and grasslands) through listing of colonizing species and collection of photographic evidences of change over time and progressive utilization of such areas by wild ungulates like chinkara, nilgai, wild boar etc.

### **III - CAPACITY BUILDING OF THE STAFF (Refer Objective 'e')**

#### **a) Support the local management in taking all necessary steps to enhance the capability of the local staff**

Purpose: To ensure that the local staff is in a state of readiness to receive the lions and to ensure latter's wellbeing in the long term till they acclimatize fully and start wild ranging)

Methodology: Conduct a participatory capacity building needs assessment exercise for the local staff. Suggest suitable measures and facilitate actions.

### **IV – EDUCATIONAL AND OUTREACH PROGRAMMES (Refer Objective 'f')**

#### **a) Establish felt needs and develop suitable programmes and material**

Purpose: To promote wider appreciation and ownership of the whole effort)

Methodology: Seek and build synergies with the expert organisations for the needful. This activity shall take place only in due course and not be taken up in the initial formative stages of the Research station.

### **IV – PUBLICATION OF RESEARCH FINDINGS (Refer Objective 'f')**

#### **a) The research findings shall be reported / published to relevant authorities as well as in peer reviewed journals and popular publications**

Purpose: To ensure that the research findings are made known to all concerned as well as to the general public)

Methodology: All efforts shall be made to provide timely progress reports to all concerned and prepare and publish research findings from the work done at the Research station.

### **IV. Monitoring and Evaluation**

a) A mechanism (in form of a formal MOU with the state government of MP) shall be established early

in the life of the project so that the research done at the Research station is relevant and geared to meet the 'felt needs' of the local management in order to strengthen their hands for an improved management of the sanctuary. b) An advisory body is proposed to be established as part of the MOU who shall monitor the progress and tender advice to the Research station from time to time.

- a) Progress reports, peer reviewed and popular publications
- b) Appropriate inputs into the knowledge enriched management of the sanctuary
- c) Enhanced capacity of the sanctuary staff
- d) Wide ownership of the programme to set up a second home for the endangered Asiatic Lion through focussed outreach and educational programs
- e) Developing a model for the setting up of such field research stations in other wildlife areas in the country.

## VII. Action Plan and Time frame

### **Establishment Phase** (Year One)

- PEACE Institute enters into an MOU with the state government of MP for the establishment of the Field Research Station inside the Sanctuary (0-3rd months)
- PEACE Institute hires a full time be Resident researcher and a technical assistant. (4th month)
- Field Research Station is established with start up

support infrastructure (4th - 6th month).

- Ecological baseline parameters are identified and documentation / collation of information started / carried on (5th - 12th months)
- Supervisory travel and consultation / advice by PEACE supervisors (4th - 12th month)
- Quarterly progress reports (9th and 12th month)

### **Consolidation Phase** (Year Two)

- PEACE Institute reviews the first year progress (in consultation with all key stakeholders) against targets and determines gaps if any and ways and means to fill them (1st - 2nd month)
- Additional staff (if found necessary) is hired
- Habitat mapping of the sanctuary and surrounds (using GIS technology) is carried out (1st - 12th month)
- Ecological monitoring of identified habitats (grasslands, wetlands, woodlands etc) are carried out on predefined parameters (3rd - 12th month)
- Prey animal populations are monitored and trends established (half yearly basis)
- Staff capacity enhancement measures (including exchange visits of staff at Kuno and at Gir) are planned and facilitated
- Supervisory travel and consultation / advice by PEACE supervisors (As per requirement during the year)
- Quarterly progress reports (3rd, 6th, 9th and 12th month)

## About PEACE Institute

***Promotes a charitable world. Believes in successful nature conservation.*** PEACE Institute Charitable Trust is an organisation dedicated to the promotion of nature conservation as a strategy for the establishment of a peaceful world.

PEACE Institute began its activities first as a firm in September 2002 and later became the PEACE Institute Charitable Trust in May 2003. It is managed by a Board of Trustees and is advised by a group of eminent conservationists in the country. The PEACE Institute Charitable Trust is a registered Trust. It is also registered under the section 12A and 80 G of the Income Tax Act, 1961.

Dedicated to further the cause of wildlife conservation in the country, it is managed by experienced professionals with creditable track record. Since its founding in 2003, the PEACE Institute has been engaged in or developing projects relating to field research, capacity building, ecodevelopment, field assessment of ongoing projects, monitoring of wildlife trade, park - people relations, natural history, nature education, documentation and dissemination.