

Monitoring of Animal Populations and Habitats

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7.1 Background

Scientific monitoring of prey, predator and their habitats combined with adaptive management actions is the key to the long term success of any conservation effort. Monitoring population trends is very crucial for the conservation of species and for planning management interventions. The critical aspects of a good monitoring plan are:

1. It should be based on sound scientific principles and should stand the test of peer review.
2. The data should be collected periodically by competent persons and it should not have any bias.
3. It should employ reliable indicators and robust statistical methods.

The SEC has observed that monitoring activities presently carried out by the department are inadequate, inconsistent and their outcomes are largely unreliable. The data is routinely collected and the process is purely a departmental affair, except on a few occasions where a few volunteers and NGOs have been involved. The Sariska crisis would not have occurred, if a rigorous monitoring system had been in place.

The SEC has examined the “Methodology for estimating and monitoring tiger status and habitat” circulated by the Director, Project Tiger and “Monitoring Tigers and their prey” by K.Ullas Karanth and James D.Nichols.

The SEC recommends that the Forest Department of Rajasthan adopts scientific monitoring on the following lines:

1. *For population estimation of the big cats and their prey, it is recommended that accurate, field tested scientific methods of estimation be carried out in collaboration with external agencies. The department is presently not equipped technically, has inadequate resources and personnel to carry out such scientific studies. The staff should also be trained in using modern survey instruments like GPS.*
2. *The Department should conduct presence-absence surveys and periodically monitor relative abundance of the big cats. The departmental staff can be appropriately trained to carry out such surveys and based on the data collected appropriate management interventions can be made. The most important aspect of the monitoring process would be proper analysis of the data generated in order to detect early warning signals and to take immediate steps for investigation and management interventions. In presence - absence surveys designed to estimate habitat occupancy, both scats and tracks are good indicators of the tiger's occurrence. For the park management, it would be imperative to ascertain the presence of the flagship species by periodic surveys by frontline staff. The absence of the animal over a period of time will be indicative of an "early warning signal" and based on the observations, a proper investigation of the habitat occupancy of the animal should be immediately taken up.*

The staff in charge of a Forest Beat is expected to do thorough patrolling covering the entire beat for protection purposes. The patrolling staff can be easily trained to conduct such surveys.

7.2 Monitoring Framework

The SEC recommends the following broad monitoring framework:

- ◆ Identification of suitable network of roads and trails.
- ◆ Sampling routes of 10-15 km. Survey teams may traverse trails/routes in a day using pedometer (GPS or compass to keep track of routes used).
- ◆ If sampling routes are replicated over a period of time, in order to estimate detection probabilities for signs, there are 2 alternatives:
 - Remove the detected signs(collect scat, brush away tracks)
 - The number of days between two surveys has to be long enough for the tracks or scats of the earlier survey to disintegrate completely.

- ◆ Segments of 0.5 – 1 km may be marked to observe and record the track/scat Encounter Rate per sampling unit. The index of tiger abundance in this case would be the proportion of the sampling segments in which the tiger tracks are encountered. For example, an index estimate of relative tiger abundance of 0.22 means 22% of all sampled segments had tiger tracks present in them.
- ◆ Use a combined index where both tracks and scats are encountered and where relative abundance is the parameter of interest.

7.3 Monitoring of Tigers

Traditionally, tigers have been monitored by the pugmark method which was developed by S.R. Choudhary in early 1970s and later improved by Panwar in 1979. The methodology was adopted by Project Tiger and has been the only method for monitoring the populations of tigers. The methodology though followed in the entire country, is not considered as a reliable one and has come under severe criticism mainly because the method is based on imprecise assumptions and subjectivity during the analyses. In view of the recent advances in wildlife biology the department should adopt the latest state-of-the-art techniques for the estimation of population densities. The SEC recommends that the *“Index Surveys of Tigers using Camera Traps” should be used. The department should concentrate on the densities of the animals rather than the numbers. This has already been demonstrated in RTR during the population estimation supervised by the SEC.*

Ranthambhore is the only place that is left with the last surviving western most population of tigers. It is the only source population. Hence survival and sustenance of this population is paramount. We understand that so far no scientific studies on the population dynamics, survival rates, habitat occupancy, and dispersal of tigers have been taken up. Such studies only, can ensure the long term survival of the species. The SEC strongly recommends that *radio telemetry studies of tigers should be taken up. Radio telemetric studies would also help to ascertain the status of the juveniles and particularly the transients (2 - 3 years old) and the dynamics of area occupancy with reference to social behaviour of the animals.*

7.4 Monitoring of Prey Abundance

The SEC has examined the old census reports of the two tiger reserves and is of the view that the reliability of their results cannot be ascertained due to a number of factors. Traditional waterhole studies should be used only for ascertaining the health of the animals, but should not be used for animal abundance as is presently the case. The SEC recommends that *‘Line Transect*

Method' which has currently been used in collaboration with WII should be continued.

The SEC also recommends *habitat studies using GIS and Remote Sensing should be taken up and a comprehensive long term monitoring plan for all the protected areas in the state should be developed. The monitoring should be part of the annual plan of operations. The results of the monitoring should be made public and annual "State of the Parks" reports of the PAs should be prepared and published.*

The SEC recommends *immediate creation of a Rajasthan State Wildlife Research Advisory Committee (RSWRAC), which would mainly include independent experts to suggest, assess and analyse all issues concerning research and monitoring. Collaboration with national scientific institutions and local universities and colleges should be actively sought by the wildlife wing in order to imbibe modern scientific knowledge in strengthening wildlife conservation.*