Project Update: March 2009

Project summary

The Agasthyamalai and Periyar-Srivilliputhur hills form the southernmost ranges of the Western Ghats and provide important habitat for several endangered species. Once contiguous, they are increasingly separated by human impacted land, rendering inter-range large mammal movement difficult and affecting their population viability. This project aims to identify ecologically valuable areas that are also socially and economically feasible for corridor establishment, at both the local and landscape scales. This will form the basis of a long-term research and conservation programme in the region.

Objectives

The objectives of this project were to:

1. quantify animal occupancy and habitat use patterns over the landscape, and factors that affect these;
2. quantify movement patterns for elephants;
3. identify areas suitable for establishing corridors at both the local and landscape level; and,
4. identify land use and cropping patterns, forest dependency and conservation attitudes among local residents, to inform future conservation work.

Activities

The project began on 1 August 2008, after permission to conduct fieldwork was received. Survey design, field protocols and data collection techniques were planned during August, based on our understanding of the study region. Field work was not conducted in August due to heavy rains. In September 2008, we tested and fine-tuned these techniques in the field. We also trained the field team in data collection and field protocols during this period. The final methodology for occupancy surveys was finalized and is described below.

Sign-based occupancy surveys[1] for herbivores are conducted in the following manner: the survey region is divided into a grid of 2.25 km^2. This scale is appropriate for the measurement of habitat utilization rates for the study species. Nine points are overlaid on this grid, and a total effort of 4 km is invested in walking between the points in each cell and recording animal signs. For carnivores, a total of 2 km is walked along trails and roads in each cell.

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[1] MacKenzie, D. I., J. D. Nichols, G. B. Lachman, S. Droege, A. Royle, and C. A. Langtimm. 2002. Estimating site occupancy rates when detection probabilities are less than one. *Ecology* 83:2248-2255.

In October 2008, the National Highway, which passes through the survey region and is a major barrier for animal movement, was unexpectedly closed for major repairs. We decided to use this opportunity to assess whether road closure resulted in carnivores coming closer to the road and crossing it. To this end, we established track plots on likely approaches to the highway. This consisted of clearing a patch of soil on the road of at least 4 m^2, and covering this with fine soil. The resultant plot provides a good medium to record tracks of animals that walk over it. We employed local residents to maintain these plots. However, our efforts had to eventually be abandoned due to heavy rains that washed away the plots on a regular basis.

Sign based occupancy surveys began in November 2008, following the field protocols described earlier. As of 28 February 2009, we have covered 49% of the study region. We began socioeconomic surveys in late November 2008. Settlements were identified, and structured interviews conducted with residents of each settlement to collect baseline socioeconomic data. These cover a wide range of topics including land use and cropping patterns, economics of cultivation and relationship with wildlife and forests. Baseline data on estates in the area have also been collected.

Challenges

Photographic mark recapture surveys of elephants has proved unviable in this landscape, due to the lack of a good road network within forests and the difficulty in photographing animals in semi-evergreen and evergreen forests. In our future efforts, we plan to base mark recapture analysis on dung based individual identification of elephants instead of photographic identification from next year. We also plan to use camera trapping from fixed cameras on trails for large carnivores from next year.

Ongoing and planned activities

1. Occupancy surveys for both carnivores and herbivores are ongoing and will be continued.
2. More detailed socioeconomic surveys are being conducted to assess attitudes to conservation and to identify potential future conservation partners living in land identified as important for large mammal movement.
3. Settlements and estates are being fully mapped, as is the precise land use in these areas.


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