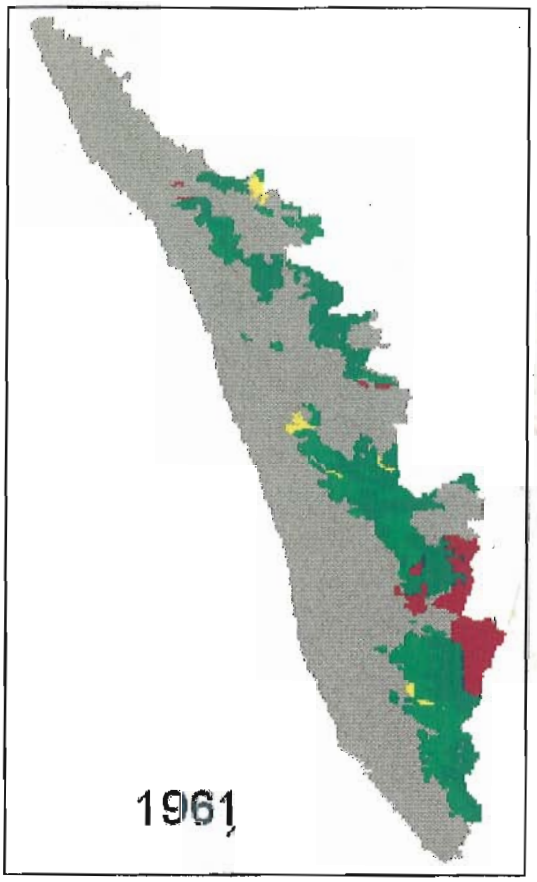
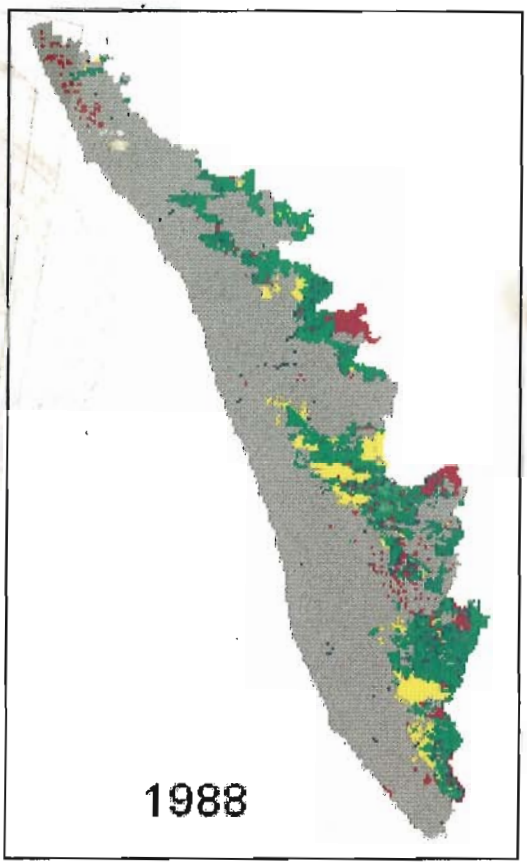
CONSERVATION PLANNING FOR THE WESTERN GHATS OF KERALA





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World Wide Fund for Nature - India
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CHAPTER VI. SUMMARY AND CONCLUSION

India being a party to CBD is in the process of formulating National Biodiversity Action plans (NBA) for implementation the prerequisite for which is the identification of hotspots of biodiversity through the use of qualitative and quantitative ecological data. Estimates of habitat changes linked to a spatial information system such as the Geographic Information System (GIS) could serve as an additional and crucial component in suggesting and locating the 'hotspots' of biodiversity and thus help in prioritizing habitats for long-term conservation.

Hence this project was taken up to identify areas for biodiversity conservation at a regional level in the Western Ghats of Kerala, assess the extent of forest cover and habitats available and the rate of loss and degradation over a long time scale, and also to critically examine the Protected Area Network for suggesting modification or addition of new areas.

The state of Kerala comprising 14 districts and 20 forest divisions was studied. Detailed study areas were eight forest divisions having conservation potential as given by Nair (1991), namely Thiruvananthapuram, Idukki, Ranni, Chalakkudi, Nemmara, Palakkad, Nilambur and Wynaad. Plants and birds were sampled quantitatively in different habitats of these divisions during 1995-96. Information on the distribution of some selected endemic plants of the Kerala Western Ghats was collected from the herbaria and mapped. This showed most of them to be present in the moist forests outside the protected areas which may be because of the inadequate sampling in the protected areas.

During the survey maximum number of species of plants (199) was observed in Thiruvananthapuram division and minimum in Ranni (78). A total of 21 endemic species were collected of which six were endangered, but only one endangered non-endemic. The shrub layer at Siruvani showed maximum diversity (4.04) with 130 species. Tree species diversity was maximum (3.99) in Chalakkudi with 91 species.

Of the 212 species of birds recorded during the study, 60 (28%) were found in all the eight divisions and 36 (17%) in only one division. Out of the 17 species (including one subspecies) endemic to the Western Ghats, 12 were sighted, the maximum (11) from Siruvani followed by Nelliyampathy (10) and Ranni (9). Of the seven threatened species recorded during the study, the maximum were from Nelliyampathy (6) followed by Siruvani. A total of 14 near-threatened species were found with the maximum from Chalakkudi followed by Palakkad, Nemmara, and Thiruvananthapuram. An attempt was made to prioritise conservation areas by considering birds (especially threatened and endemic) as the indicators. Palakkad division (Siruvani) ranked first followed by Nemmara (Nelliyampathy), Ranni, Chalakkudi, and Nilambur while Wynaad was the last. Total species richness and diversity recorded did not correspond with the ranking.

Detailed spatial analyses of habitat loss, its transformation and quantitative metrics to compare the spatial data were done using two-time data (late 1950s to late 1980s) and GIS tools. The aggregated forest area in all 14 districts over the entire state in 1961 and in 1988 was found to be 10,820 sq.km and 9,904 sq.km respectively. Thus the annual rate of loss of forest cover was 0.28% over the thirty-year period which was similar to that shown by NRSA between 1970s and 1980s. But it was much less than that recorded for the tropical countries. For the entire state there was a substantial decline of 47% of the evergreen/ semi-evergreen habitat and 11% decline in degraded/scrub category while plantation and deciduous forest cover have gone up by 6 and 7.5% respectively.

The four divisions of Ranni, Munnar, Periyar-Wildlife, and Wynaad alone make up more than 50% of the evergreen/semi-evergreen habitat. The five divisions of Munnar, Palakkad, Nilambur, Ranni and Waynaad account for approximately 50% of the deciduous forest category. Approximately 50%

of the forest plantations are located in Vazhachal, Parambikulam, Thenmala, Ranni and Chalakkudi. About 50% of degraded areas are located in Palakkad, Munnar and Wynaad.

Habitat loss and degradation in different districts and forest divisions are also analyzed. Kozhikode, Kottayam and Kollam had substantial decrease in forest cover.

The two indices of landscape ecology *viz.* Perimeter/Area and Shape Index of habitat patches were obtained for 12 districts of Kerala. In most districts and in all categories of habitat excepting plantations, the two indices showed marked increase in the values denoting increase of edge effect, a debilitating influence on most species populations and community. Hence, these are better indicators of habitat degradation rather than estimates of habitat loss.

The census data of mammals in 1993 (KFD, 1994) was used to derive the ecological densities in each of the divisions, which were categorised into low, medium, and high for six species, namely Elephant, Gaur, Sambar, Nilgiri Langur, Lion-tailed Macaque, and Wild Dog. Divisions were then prioritized based on the composite score. Parambikulam, Ranni, Nilambur, Nemmara, and Thiruvananthapuram were the five divisions with top priorities for conservation. The forest divisions of Ranni, Nilambur and Nemmara alone had a high concordance of large mammal density with that of bird species when compared with the scores obtained from the abundance data of rare, threatened and endemic birds. However, Chalakkudi and Thiruvananthapuram also got high priority for birds. Siruvani (Palakkad) did not come to top priority because of the lower abundance of the rare species sighted as the visibility was low in the thick forests.

An agenda and action plan for conservation planning of the Kerala Western Ghats

1. From a perspective of large mammal and endemic bird species conservation, the much overlooked landmass of Nelliyampathies and Anamalais abutting the Palghat gap hold a lot of conservation promise at medium and long term. This tract includes the forest divisions of Nemmara, Parambikulam and Chalakkudi along with various private estates.

2. The extent of landuse in this region should be carefully and critically evaluated to help design conservation goals. The landuse include private forests, coffee and tea estates, forest tree plantations, hydel projects, cultivation, etc.

3. A careful evaluation of forest management practices in the altitudes below 1000-1200 m.

4. Immediate upgradation of conservation status of Ranni division, so also of Palakkad and Nilambur.

5. A critical examination of major anthropogenic pressures on all evergreen habitats.

6. An assessment of hydrological values of catchment zones of major reservoirs and river valley projects.

7. Establishment of an ecological monitoring programme.

8. Integration of biodiversity conservation into state perspective planning at different levels of organization.

9. Identification, synchronization and harmonization of various forest management practices being carried out under different agencies.

10. A peoples' participatory programme in planning, executing and overseeing cooperative biodiversity management.

CONCLUSIONS

The study has shown the merits of using the existing information/ data for conservation assessment and management planning. Studies on the distribution of endemic plants have brought out the need for systematic and intensive sampling of different areas and habitats. Through extensive use of GIS and the available information, prediction models can be generated for the distribution of these species. Bird studies have shown the usefulness of the ocurrence data of the rare and endemic species as indicators for prioritising areas for conservation.

The study on habitat transformations in Western Ghats has demonstrated and brought into focus the utility of published spatial data. The habitat transformation may be used in terms of biodiversity values for a number of taxa for which quantifiable data can be obtained. The assessment of habitat degradation through the use of landscape indices has much more potential. Effort should be made to build up a comprehensive database with the available data, spatial and numerical, to facilitate a truly integrated and objective assessment of conservation planning. The Kerala Landuse Board along with a host of institutions such as KFRI, CESS, TBGRI, CWRDM, KSSP, several NGOs, and Universities can all contribute significantly to such a process. The concerned agencies such as the forest, agriculture, horticulture and others have much to catalyse such a development for building a model biodiversity action plan for the state.