

# *Inventory of the Biodiversity of Attappady with GIS aid*



**Salim Ali Centre for Ornithology and Natural History  
Coimbatore**

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Attappady Hills Area Development Society (AHADS), Kerala

***FINAL REPORT***  
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## Executive Summary and recommendations

Attappady area lies in the foothills of Nilgiris in the Mannarghat forest division in Kerala in the Western Ghats. The area has been largely clear-felled and has settlements and cultivation on the hills that are terraced. The Attappady Hill Area Development Society (AHADS) has been working in this region for the improvement and restoration of the habitats and also for the uplift of the living conditions of the tribes. One of the most pressing environmental concerns is prevention of loss and degradation of valuable forest biodiversity. Wherever the degradation has occurred, the process has severely affected livelihoods of humans, contributing to persistent poverty, and also loss of biodiversity. The urgent need therefore lies in re-engineering the degraded ecosystems to help continue providing valuable goods and services. All over the world, the process of re-engineering has become a new watchword and a desirable action point.

It is essential that baseline information on various aspects is available on any area of interest and is documented using GIS, so that areas can be identified and used for conservation and sustainable development. The documentation of such information on a spatial scale using GIS will be useful to decide area-specific programmes for conservation, sustainable use and development. Hence, this study has been taken up with the following **objective**:

*Inventory of the major components of biodiversity of the area, especially birds and butterflies, which can be used for deciding strategies for management and development of the area and monitoring the changes in the area.*

Towards achieving this particular goal, the free and Open Source Information Communication Technology tools have a great role to play. Open Source software development contributes to freedom in altering the basic suite of coding to improve, and modify the tool according to the requirement of any given user. In this present study, we explore the use and application of a whole suite of these tools to organize, analyse and distribute the value added products to a number of stakeholders through a case of study of ecorestoration project of Attapadi Hill Area Development Society (AHADS). This report presents our experiences in harnessing the FOSS geospatial tools from a desktop to internet based GIS applications.

Surveys were conducted during September 2006 to March 2007 encompassing 40 sites covering scrub, dry deciduous, moist deciduous and evergreen forests. The maximum sites (14) were covered in dry deciduous forest type, which was the maximum area of forest in the Attappady area. Totally 4607 individuals of 152 species of birds were counted during the samplings, which included 15 endemic species of the Western Ghats out of 24 and most of them were mainly confined to shola and evergreen forests.

Totally 133 species of butterflies were recorded including eight species endemic to the region, of which four species are endemic to south India, one to Peninsular India and three to the Western Ghats. Fourteen species observed are included in the protected list, six belonging to Schedule-I and five to Schedule II of the Wildlife Protection Act, Government of India and Danaid Eggfly included in both Schedule I and II. Diversity was more in evergreen and moist deciduous forests.

The GIS analysis was done using the Open JUMP software; ten major land use land cover categories were identified. The digital elevation model was prepared to get an overview of elevation range of the Attappady block. Different thematic layers named Boundary, Drainage, Rivers, Roads, Hamlets, Contour and Forest boundary were procured from AHADS. For each sampling site field data collection on birds and butterflies were also entered with the details of habitat type, birds and butterfly diversity indices and species richness. Diversity indices such as Shannon-Weaver diversity index and Species richness were point attributes and all point values pooled in to the habitat types and thus made into the polygons

We used the attribute query option on the layer 'hamlet' to get different community based GIS coverage for Irulas, Kurumbas, Mudugas. To understand anthropogenic pressures on the diversity, we used spatial query option of Open JUMP. We used habitat as source layer and hamlets as mask layer to generate the layer habitat-hamlets. This layer explains the relation between bird diversity and hamlets. It clearly identified the effect of three communities on the diversity and showed Irulas caused high anthropogenic pressures in Attappay followed by Kurumbas.

Query was made on the habitat of bird and butterfly species of Attappady hills to get the distribution of the species. From our species inventory list we found that shola-grassland system and evergreen forests of Attappady hills harbor many '*habitat specialists*'.

### **Recommendations**

1. Inventory of birds and butterflies in the Attappay hills shows that the Shola- grassland ecosystem in the Thudukki area has got high priority for conservation.
2. Evergreen forests in the Muthikulam and the Kurukkan Kuntru areas were of the highest diversity in the evergreen forests and are of high priority for conservation.
3. In the Deciduous forests the Mulli areas has the maximum endemic birds and butterflies but are having high pressure from the local communities,

- which needs to be reduced.
4. Irula hamlet areas are of high priority for the restoration activities in the Attappay area followed by those of Kurumbas and Mudugas. Preservation of the natural habitat activities should start first in Mudugas area where the disturbance was minimal followed by Kurumbas.
  5. Livelihood improvement activities for the tribes should start from the Irula community who damaged the biodiversity maximum in Attappay area.
  6. Biodiversity entrepreneurship activities may be started from Mudugas followed by Kurumbas and Irulas.
  7. From the open source software effect of such activities and their impact may be derived and monitored.
  8. Hands on training for the end users may be given to enter the biodiversity values for further management practices and monitoring.