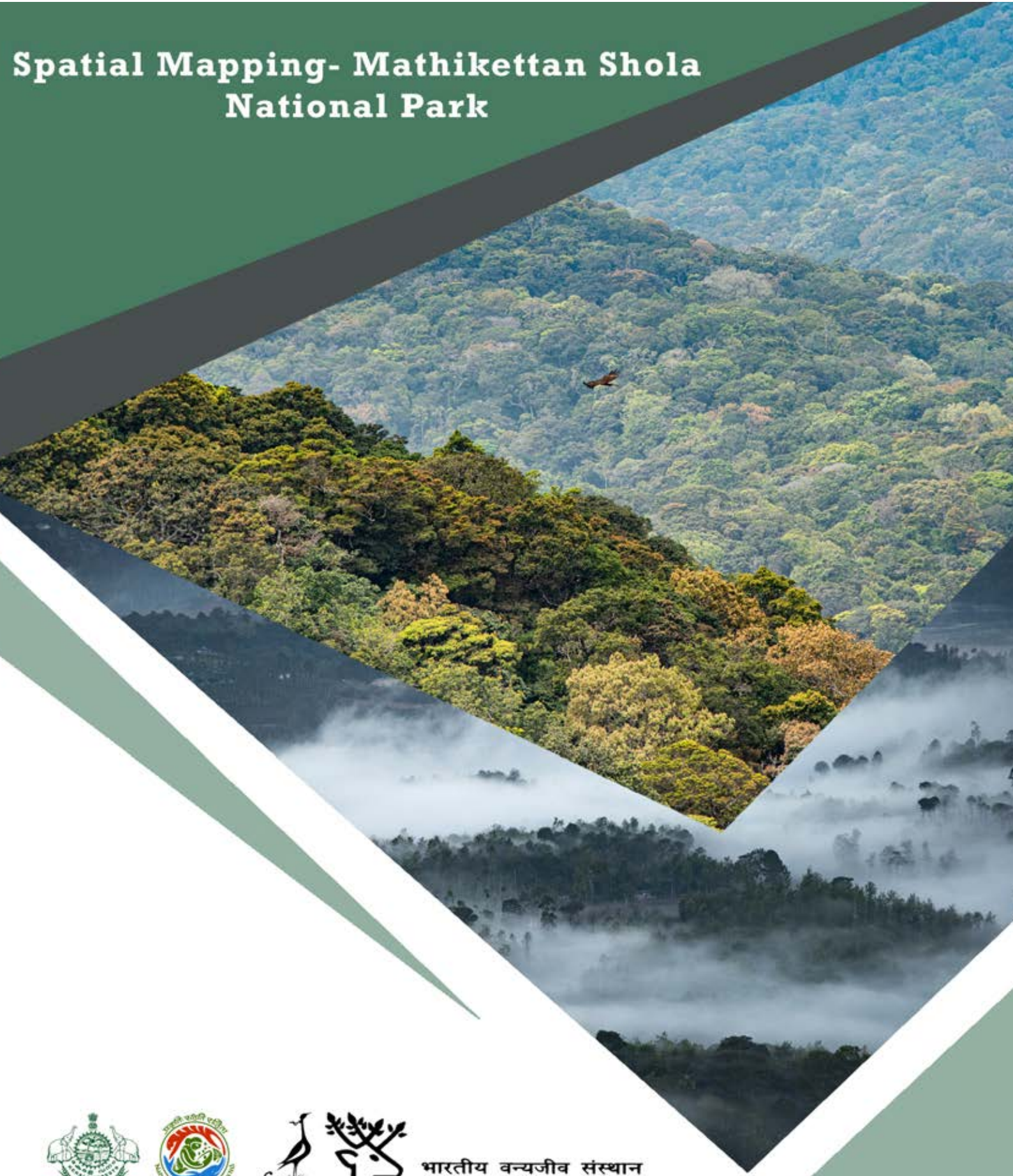
Spatial Mapping- Mathikettan Shola National Park



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

Submitted by
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Ministry of Environment Forest and Climate Change
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Report

Spatial Mapping - Mathikettan Shola National Park

Kerala Forest Department

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Submitted
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Authors

Executive Summary

Spatial mapping is the process of representation of geographic data (where it is on the earth) using a spatial tool platform such as Geographic Information System (GIS). Such information is an important prerequisite in planning the sustainable development strategies of a land unit. Mathikettan Shola National Park, situated in the Cardamom Hill Reserves (CHR) of southern Western Ghats had a history of migration in the Travancore region, is important in terms of ecological and cultural diversity, and socioeconomic profile.

Mathikettan Shola National Park located in the High Ranges of the southern Western Ghats is undulating landscapewith hillocks of varying heights. It is situated on the north-east side of the Cardamom Hill Reserve, within the geographical limits of 9.997583°-9.975766° North latitude and 77.222074°-77.271975° East longitude with an area of 13.00 km^2. Administratively, the park falls under Poopara village of Udumbanchola Taluk in the Idukki district, Kerala and it is one of the national parks under the administrative control of Munnar Wildlife Division. This PA represents patches of woodland, the only remnants of fairly undisturbed native vegetation in the CHR areas as a whole. This study was designed to understand the vegetation patterns of Mathikettan shola National Park through fine-scale (high-resolution) satellite data with Level V/VI classification using GIS.

The above-mentioned objective was achieved using both topographic maps published by the Survey of India (preferably 1:25000 scale) and fine resolution (LISS IV; 5.8 m resolution) satellite data procured from the National Remote Sensing Centre (NRSC). The thematic layers such as administrative boundaries, road network, drainage network, slope, aspect, and elevation were prepared. The high-resolution satellite data (LISS IV) was procured from NRSC and mosaicked with the administrative boundaries, and necessary pre-processing analysis was carried out. Object-Based Image (OBI) analysis and Support Vector Machine analysis, followed by ground truthing, were carried out to find out the landuse and landcover classes of the landscape.

A total of 10 land use/landcover classes, both natural and man-made, were identified in the PA. This includes dense and disturbed types of subtropical hill forests, southern montane wet temperate forests, southern sub-tropical hill forest, west coast tropical wet evergreen forests, reed thickets, montane wet grassland, eucalyptus and rocky outcrops. Among these, 9 are

natural landcover contributing nearly 100% of the area and only 0.35% area is occupied by eucalyptus plantations along the border. Among the natural landcover, primary forest contributes 12 km2 (90.1%) and secondary forests and other landcover constitute 0.68 km2 (5.12%). Subtropical hill forests and southern montane wet temperate forests are the two dominant vegetation types.

The Patch metric analysis identified more than 200 patches in MSNP of which the majority (149) are rocky outcrops. Although the canopy of PA looks uniform, the disturbance created by humans in the past has created patches. It is interesting to note that these patches are well connected and placed adjacently and facilitating the movement of wild fauna, both terrestrial and arboreal as well as small and large. Among the vegetation types, subtropical hill forests and montane grassland has more patches compared to other landcover classes. One of the major management issues noticed during the fieldwork is the presence of invasive species, Ageratina adenophora, which needs to be controlled. The landuse and landcover of the PA is highly heterogeneous and support rich biological diversity and natural resources.