



## **Thesis Abstract**

### **Land Use Changes and Biodiversity Conservation in Lore Lindu National Park, Central Sulawesi, Indonesia**

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The study was conducted at Lore Lindu National Park, Central Sulawesi, Indonesia from February 2001 to April 2002 for field study, and July to August 2003 for GIS analysis. Factors affecting land use changes at the individual family and village factor levels of the 15 buffer zone villages associated with four major vegetation types, namely lowland, monsoon, lower montane, and anthropogenic of Lore Lindu National Park were examined. This study aimed to determine the dominant driving factors for land use change from natural forest to non-forest, and its implications on biodiversity.

Village surveys were conducted to gather individual family data i.e. family size, educational attainment, agricultural land possession in the village, agricultural income, ranger activity and agricultural land inside the National Park areas, using semi-structured interview. General village information included population, migration, distance to the city, and ground check for potential agricultural land in the village through key informant interviews and direct field observation. Forest monitoring with a transect of 50 m apart and length up to 1,300 meter was established for each village. The number of trees with > 50 cm dbh, trees with 20–50 cm dbh, rattan clumps with stem > 8 m, rattan stumps, and vegetation types were used as proxy for biodiversity status.

Stepwise multiple regression analysis was used to determine the dominant factors of land use changes at the individual family and village levels. Individual or a combination of the nine driving variables, namely population, family size, education attainment, number of migrant families, ranger activity, agricultural land possession, agricultural income, potential agricultural land in the village, and road distance to the city were tested. Pearson correlation analysis was used to determine the relationships between land use change and biodiversity status. Net present value of the natural forest and non-forest land uses were computed in the benefit and cost analysis.

The dominant factors for land use change at the village level were migrants and education, and agricultural land possession at the individual family level. Hence, changes in forest structure resulted to a negative effect on biodiversity status. The net present value (NPV) of land use change from natural forest to non-forest was negative. This implies that the area should be better retained as a natural forest.

Collaborative management with appropriate zonation implementation is one feasible solution to long-term biodiversity conservation in Lore Lindu National Park.