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“Development on the margin”

## Habitat Suitability Modelling for Tiger (*Panthera tigris*) in the Hukaung Valley Tiger Reserve, Northern Myanmar

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### Abstract

Tiger (*Panthera tigris*) requires large areas of contiguous habitat for long-term survival. In the world's largest tiger reserve, the Hukaung Valley in northern Myanmar, the tiger population is declining due to a combination of habitat loss, human interferences and decreasing prey availability. Identification of high habitat quality areas for tiger is urgently needed for future conservation of that species in the study area. Remote sensing (RS) and geometric information systems (GIS) can be used as tools to assess environmental variables relevant for habitat selection of wildlife species and they can help to monitor larger areas of habitat. We modelled habitat suitability using the empirical multivariate approach of the Ecological-Niche Factor Analysis (ENFA). The principle of ENFA is to compute suitability function by comparing environmental variable values of species presence cells with respective mean values of the entire study area. Independent data for the model came in form of ecogeographical variables (EGVs) on land use, topography and human-factors features whereas tiger presence points formed the response variable. Landsat imagery and land cover classes from existing map were used for producing a segmentation-based landuse map. The classification key of the map was constructed based on literature review and expert interviews, including feature classes which were assumed to be relevant for tiger ecology. Preliminary modelling results (suitability map) showed that areas of high habitat quality are associated with large areas of evergreen opened forest and kaing grass in the study area. The applied model appears to be a very promising method to build habitat suitability model also for other endangered species.

**Keywords:** Ecogeographical variables (EGVs), Ecological-Niche Factor Analysis, habitat suitability model, Hukaung Valley Tiger Reserve, multivariate empirical modelling, remote sensing (RS), geometric information system (GIS) , tiger