

Wildland Fire in Terai Arc Landscape of Lesser Himalayas Threatning the Tiger Habitat

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Abstract : The present study deals with fire prediction model in Terai Arc Landscape, one of the most dramatic ecosystems in Asia where large, wide-ranging species such as tiger, rhinos, and elephant will thrive while bringing economic benefits to the local people. Forest fires cause huge economic and ecological losses and release considerable quantities of carbon into the air and is an important factor inflating the global burden of carbon emissions. Forest fire is an important factor of behavioral cum ecological habit of tiger in wild. Post fire changes i.e. micro and macro habitat directly affect the tiger habitat or land. Vulnerability of fire depicts the changes in microhabitat (humus, soil profile, litter, vegetation, grassland ecosystem). Microorganism like spider, annelids, arthropods and other favorable microorganism directly affect by the forest fire and indirectly these entire microorganisms are responsible for the development of tiger (*Panthera tigris*) habitat. On the other hand, fire brings depletion in prey species and negative movement of tiger from wild to human- dominated areas, which may leads the conflict i.e. dangerous for both tiger & human beings. Early forest fire prediction through mapping the risk zones can help minimize the fire frequency and manage forest fires thereby minimizing losses. Satellite data plays a vital role in identifying and mapping forest fire and recording the frequency with which different vegetation types are affected. Thematic hazard maps have been generated by using IDW technique. A prediction model for fire occurrence is developed for TAL. The fire occurrence records were collected from state forest department from 2000 to 2014. Discriminant function models was used for developing a prediction model for forest fires in TAL, random points for non-occurrence of fire have been generated. Based on the attributes of points of occurrence and non-occurrence, the model developed predicts the fire occurrence. The map of predicted probabilities classified the study area into five classes very high (12.94%), high (23.63%), moderate (25.87%), low(27.46%) and no fire (10.1%) based upon the intensity of hazard. model is able to classify 78.73 percent of points correctly and hence can be used for the purpose with confidence. Overall, also the model works correctly with almost 69% of points. This study exemplifies the usefulness of prediction model of forest fire and offers a more effective way for management of forest fire. Overall, this study depicts the model for conservation of tiger's natural habitat and forest conservation which is beneficial for the wild and human beings for future prospective.

Keywords : fire prediction model, forest fire hazard, GIS, landsat, MODIS, TAL

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