Variation analysis on buffer zone, cutting-limit and slope angles in timber harvesting planning

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Abstract

Managing a very complex, ecosystem such as in maintaining sustainability of a tropical forest is very challenging. The challenge has increased in the recent years in timber producing countries like Malaysia due to increased demands and environmental pressures that need forest managers to make crucial and quick decisions. At present, forest management not only deals with harvesting but also conservation and rehabilitation. These normally involve large volumes of data and analysis, which have been mostly carried out manually in most tropical countries. As a result, the efficiencies and effectiveness of the decisions implemented are limited. To overcome this difficulty, this study proposes the development of a GIS-based tool for timber harvesting planning for a tropical forest in Malaysia. Timber harvesting is chosen, in this study because it is one of the most sensitive environmental activities in tropical forests. This study presents an analysis of the rule-set, as specified in the Selective Management System (SMS), which is used during forest harvesting in Malaysia. The rules are implemented in a Geographic Information System (GIS), using the ArcGIS 9 software, and these are applied to a small test area, part of the Bubu Forest Reserve (FR) in Taiping, Perak, Malaysia. Although most of the rules specified in the SMS are based on fixed threshold values, this study also presents an analysis in which the threshold values are modified, such that the effect of variation in the threshold is explored. Thus, the study evaluates the sensitivity of the forest management system to the specific threshold values employed in the SMS.

Author keywords
And selective management system (SMS); Geographic information system (GIS); Harvesting; Tropical forest

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