

Ecological Modelling as a Tool for Damages Reducing to Forest Ecosystems during Skidding

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ABSTRACT:

Stand ecology can be affected during forest harvesting. The aim of the present study was to determine potential area extent of stand damages on the forests based on stand monitoring data collected from 351 circle plots with the surface area of 314 m² before the beginning of logging operations. Slope percent, land form, roughness, forest type, stand density, extracted volume and extraction system were collected as predictor variables. Residual tree and regeneration damage as response variables were measured during postharvest assessments too. In this context a geospatially explicit predictive model of stand damage was developed using LR and FR as an interface and collection of functions in R. Geospatially, stand damages in terms of residual tree and regeneration map were depicted by GIS package, separately. According to success and prediction rates, LR had the best performance model compared with FR in residual tree and regeneration damage modelling. Based on the LR results slope, forest type, stand density, harvested volume and extraction system were the most effective variables controlling stand damages. These models by local calibration are decision support tools to predict stand damages during ground-based harvest operations on other forest lands.

Keywords:

Oreochromis niloticus, fish farming, pond, water quality, fertilization.