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
of

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Combinatorial Optimization in Forest Ecosystem Management Modeling

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Abstract: Modeling forest management activities has been tackled by scientists over the last two decades. Both simulation and optimization techniques have been used in solving forest management planning problems. With the introduction of ecosystems management that focuses on the sustainable production and maintenance of ecological, social and economical values, neither approach provided a credible solution technique to help design the complex structure of forest management activities. Alternative to these, is a group of meta-heuristic or combinatorial optimization techniques which have just gained the attention of forest modelers. In this paper, an attempt is made to introduce the concept of combinatorial optimization, to compare it to the traditional modeling approaches, to explain some of the meta-heuristic solution techniques such as simulated annealing, taboo search and genetic algorithms, and to discuss their implications in forest ecosystem management. It was suggested that these techniques have great potential in modeling ecosystem management in a near optimal fashion.

Key Words: Combinatorial Optimization, Ecosystem Management, Modeling, Sustainability

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