Followup and New Challenge for Coming Generations

Procedure for Suitability Analysis of Forestry for Sustainable Forest Management: A Case Study in Odai Town, Mie Prefecture

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Abandoned forests have been increasing in Japan, because the willingness of forest management has been declining with the falling log price caused by mass imports of timber. Forest zoning for suitable and sustainable forest management came to be carried out in Japan with the establishment of Forest and Forestry Basic Act in 2001 as turning point. This study aimed to propose a method for evaluating suitable sites for forestry by comparing various thematic maps created from the data of forest register book such as slope and existence of road network using GIS in Odai Town, Mie Prefecture, Japan. Suitable sites for forestry were distributed in the eastern part of the town, where young well-managed forest were distributed and forest road networks were well-developed. In contrast, the western part of the town was considered as unsuitable sites for forestry because the area had steep slopes which result in the difficulty of road network development. Accordingly, many elderly forests were not managed well in this area. If areas with high possibility of slope failure were identified, forest road network might be able to construct either in the western area and the situation of forest management in the area will be improved. Presentation of the results of forest zoning by using GIS will be effectively useful in sharing knowledge and mutual understanding.

Additional keywords: forest zoning

C: Forest information systems, e-forest
The Introduction of the Research Project: Development and Demonstration of Forest Management System, “e-forest”, which Supports Revitalization of Forest and Promotion of Utilization of Unused Forest Resources

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The present, the thinned wood in the forest is being underutilized and left because of reduced forestry profitability. To solve this problem, efficient forest management aimed at improvement in forestry productivity and effective utilization of thinned wood are important. Based on the present state, we will study the following problems in this research project: (1) Construction of forest resource databases for formulating an effective forest management plan, (2) Development of a forest analysis system that can evaluate the effect of forest operation, (3) Evaluation of the possibility of thinned wood utilization, and (4) Development and implementation of the forest management system “e-forest.” The development and implementation of “e-forest,” which is the goal of this research project, supports a forest manager and forester, who are in charge of finding a solution of following problems: (1) Proposal of thinning methods and forest revitalization techniques for adapting to various forest conditions, especially to the artificial forest that is in a state of devastation, (2) Decision making with regard to creating an efficient forest management plan for realizing the management goal, and (3) Promotion of forest management that enables the coexistence of forest improvement and effective utilization of thinned wood. In this presentation, we outline our research project and present the current state of the challenge.

Additional keywords: forest management system, revitalization of forest, utilization of unused forest resources

Estimation of Crown Closure Rate in Sugi and Hinoki Stands after Heavy Thinning

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Recently there have been increasing number of stands in which thinning is not carried out at the right time and overpopulated because of reduced forestry profitability. In overpopulated artificial forests, there are some stands in which thinning has never been carried out, even if the forest is a middle-aged one. In such forests, heavy thinning should be carried out to resolve the overpopulation problem. Heavy thinning in overpopulated artificial forest is occurred large gaps in closed crown and changed environment in stands extensively. Although it is apprehended that the environment change after heavy thinning affect crown extension related growth increment of stand as inhibiting factors, the effect is not always apparent. Therefore, to estimate crown closure rate, the plots were set at stands where heavy thinning were carried out and differed the number of years after thinning, and stand density, breast-height diameter, tree height, crown height, and branch spread in 4 directions were investigated. The total number of stands evaluated was 54: 32 hinoki stands (37-60 years old) and 22 sugi stands (34-68 years old). Using factors such as the number of years after thinning, thinning rate based on the number of trees, basal area, mean tree height, and crown density of stands were estimated using multiple regression analysis. Our study showed that the crown closure rate was almost similar to the rate of crown closure caused by general thinning.

Additional keywords: crown closure rate, heavy thinning, overpopulated forest

Modeling Structural Development of Plantation Forests Addressing Diagnosis System of Forest Management

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With considerable large area of plantation forests in Japan, viable measures are required to dissolve several issues on forest management: e.g. how to recover over-crowded plantation forests, how to shift to long-rotation forestry. To meet the requests particularly on silviculturally technical problems, it is needed to evolve scientifically based criteria for forest health and needs of thinning, and prediction techniques of forest growth. Now the project is going to develop a portable laser scanning equipment and data processing software for measuring forest structure, and forest management system, e-forest. The following quantitative