

Vegetation Structure and Utilization of Natural Forests in Shimizuyama, Miyama city, Fukuoka prefecture, Japan

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In recent years, the needs and interests of utilization of natural environment are increasing. But there are many problems between the use of forest resources and the management of natural forests.

The problem is difficult to design the management and use system because both the manager and the user do not understand the value of forest resources correctly.

In Japan, on the other hand, the evergreen forest, many of which are natural forests, is now destroyed by human impact and remains only a few as shrine forest. In addition, the evergreen forest in the Kyushu is a microcosm of the Japanese evergreen forest because it is composed of representative plant communities of evergreen forests in the east of Kyushu in Japan. Therefore, in considering future conservation of natural forests in Japan, it is meaningful to target shrine forests, which are evergreen forests in the Kyushu. So in this study, we examined conservation measures of natural forests and suitable usage methods of them in natural forests in Shimizuyama, Miyama City, Fukuoka Prefecture.

Shimizuyama is located in the northeastern part of Miyama City, Fukuoka Prefecture. Its elevation is about 350m. Kiyomizudera temple is at the middle of Shimizuyama. There are mountain roads and roadways from the parking to near the summit. So we can move by car from the foot to the summit. In addition, *Symplocos glauca* - *Castanopsis sieboldii* of *Camellia japonica* - *Gebiet* spreads around the Kiyomizudera temple as a shrine forest.

The method of this research is divided into two, one to grasp the actual condition of vegetation structure of natural forest and one to grasp the actual situation of forest resource utilization by the people.

The method of grasping the actual condition of the vegetation structure of natural forest was carried out by the line transect method. We set a line orthogonal to the approach road to Kiyomizu temple and recorded vegetation structure and environmental characteristics on that line. Also, the line crosses the mountain roads used by climbers and others. And we verified human impact to vegetation structure based on the obtained data. The verification method is to compare with the structure of the second-growth forest. We also verified a human impact in the part adjacent to the mountain roads and planting area. As a method of grasping the actual situation of forest resource utilization by people in the investigation area, we mainly took three ways. The first is an interview visitors. The second is an interview with young priests of Kiyomizudera temple as a manager of Shimizuyama. The third is a questionnaire survey for groups of climbers in Fukuoka. Also, a question was asked them about the image of the favorite forest. As a result of the survey, on the whole, it can be said that it is the structure of the natural forest. However, in a more detailed vegetation structure, there was human impact in the part adjacent to the mountain road and the planting part.

In forest resource utilization, Shimizuyama has three values, natural value, cultural value and climbing value. As a reality of visitors, many of them need climbing value and cultural value.

Considering the method of utilization of forest resources from the above, we think that it is necessary to give natural value by the characteristics of natural forest for the purpose of utilization. This is because using forest resources with the purpose of giving natural value will create understanding of natural forests and encourage appropriate use.

However, there will be human impact. Therefore, it is necessary to further study methods to prevent the influence, appropriate management and countermeasures after being influenced.

Keywords: natural forests, utilization of forest resources, shrine forests, vegetation structure, human impact