

## Vegetation in Eastern North America

Edited by Akira Miyawaki, Kunio Iwatsuki and Miroslav M. Grandtner. University of Tokyo Press. 1994, pp. 515, ISBN 4-13-067102-2 / ISBN 0-8-6008-494-9

L. PAULE

*Faculty of Forestry, Technical University, SK-96053 Zvolen, Slovakia*

Presented proceedings include 19 contributions of 12 authors who participated in the research project "Vegetation systems and dynamics under human activity in the eastern North American cultural region, for comparison with Japan" conducted within the period 1988-1990. A vegetation survey of eastern North America, from the Appalachian Mountains to the Atlantic Coast, and from Quebec to southern Florida, was conducted, and the results were compared with the vegetation survey results for the Japanese Archipelago. Comparison of the areas as a whole is difficult, since North America is more than 30 times the size of Japan. The Japanese Archipelago and the eastern North America are relatively similar in terms of the natural environment, latitude, vegetation, and recent rapid development and industrialization. The flora of the eastern part of the United States includes at the genus level most of the same plant groups as in Japan, although the species and lower level units are different, especially in the American South.

The book contains five parts: (1) Natural Environment, (2) Comparison of floras, (3) Vegetation systems and dynamics, (4) Ecology, and (5) Conservation and rehabilitation.

In the first part the natural environment and the sampling strategy for eastern North America is described by E. O. Box. He describes in detail the physiogeography, human history, climate, soils and topography, as well as natural vegetation regions (alpine belts, boreal forest region, deciduous forest region, evergreen forest region and subtropical region). For comparison purposes with east Asian flora the sampling strategy was divided into three main vegetation types: (i) vegetation of the evergreen broadleaved forest zone, (ii) vegetation of the summergreen broadleaved forest zone and (iii) boreal zone and oroboreal coniferous forest zone. Total sampling was performed over three years and covered an area of 1.8 mil. km<sup>2</sup> and resulted into 1,300 complete descriptions of vegetation stands. The strategy for sampling the geographic diversity of eastern North America and its respective vegetation types was based on recognition of zonal plus edaphic, topogenic, and other azonal vegetation types. Vegetation sampling was done using the Braun-Blanquet field methodology, which is ideally suited for geographically extensive surveys.

The second part is aimed at comparison of floras, in both regions. Although the first three contributions in this chapter are written by Japanese authors (K. Iwatsuki and H. Ohba), they describe the floristic similarity of both regions. The research project was originally planned to survey also ruderal and agricultural plant communities which are elements of urban ecosystems under strong human impact. Due to several restrictions, it was limited to the survey of natural vegetation, mainly on forest flora and substitute vegetation. Japan is characterized by a rich variety of species and a high rate of endemism (34.1%). The fourth contribution (D. M. Hunt) is aimed at taxonomical investigations of the genus *Quercus*, Series Laurifoliae, Marilandicae, and Nigrae. These series are part of the endemic North American subgenus *Erythrobalanus*, one of six subgenera of *Quercus*. Thirteen taxa of these series are indigenous in the Coastal Plain Province and Southeastern Evergreen Forest Region of the USA and are dominantly contributing to more community types.

Vegetation systems and dynamics are discussed in the third part. This part is aimed at the description of the different types forest communities from the boreal and oroboreal coniferous forests (Y. Nakamura, M. M. Grandtner, N. Villeneuve), deciduous hardwood forests (S. Okuda), forest communities in wetlands and swamps (K. Ohno), pine forest communities (S. Okuda), evergreen broadleaved forests and mangrove vegetation (K. Fujiwara and E. O. Box) to alpine forest communities (Y. Nakamura and M. M. Grandtner). Based on numerous relèves taken in North America and Japan the phytosociological similarity of both regions was analyzed and described. In all six papers published in this chapter the phytosociological similarity of both regions is well documented.

The ecology of the American *Fagus grandifolia* and Japanese *Fagus crenata* forest communities is described in detail in the fourth chapter. *Fagus crenata* is one of two *Fagus* species occurring in Japan and covers large forest area throughout Japan. Its large ecological amplitude is comparable with those of *Fagus grandifolia* in the Eastern USA, and of *Fagus sylvatica* in Europe. The altitudinal range of beech forest is from low altitudes up to 1,875 m in Appalachians and its northern limits reaches 47th parallel in the north. *Fagus grandifolia* makes admixture in different broadleaved mixed forests form the beech-maple type in the north up to beech-oak-chestnut type in the south. Total number of tree species occurring in beech communities of the Eastern

United States was 119 and the number of tree species in individual stand types varied between 12 and 41 (mean 28), while the total number of tree species in beech communities in Japan was 80, and the number of tree species in individual stand types varied between 11 and 24 (mean 17). Both taxa are ecologically similar and occur in a large number of different forest types with high species diversity.

The last part deals with the rehabilitation of the green environment and the landscape in the urban areas (A. Miyawaki and D. M. Hunt). Two contributions deal with the nature conservation in Eastern Canada (M. M. Grandtner) and the dynamics of the endangered species in Japan (K. Iwatsuki). The Canadian contribution is well documented nature conservation strategy based on phytosociological surveys. Protected areas represent only 2.0 % of the surface of Eastern Canada (the Canadian average 3.4%), while the goal of the world conservation strategy is 12%. There are in total 576 rare plants in Eastern

Canada, 57.2 % of all rare plants of Canada. The final contribution gives the results of the population dynamics investigation of the endangered plant species of Japan (895 in total) and rank them according to individual threats.

The reviewed publication is a unique comparison of the two rather remote but floristically and plant sociologically rather similar regions, the eastern part of North America and Japan. The editors did a great deal of work when compiling the work of almost 100 specialists during a three-year research project conducted in the USA and the comparison of gathered results with earlier Japanese investigations. It is a valuable source of information not only for plant scientists but also for ecologically oriented foresters when comparing plant communities and transferring the forest management practices to rather remote regions.

*Received 6 January 1997; accepted 15 January 1997*