

Assessment of Naturalness in German Forest Nature Conservation

Jan Carl Welzholz & Renate Bürger-Arndt*

I. INTRODUCTION

One third of Germany's land area is covered with forests, which are mainly composed of spruce (*Picea abies*), pine (*Pinus sylvestris*) and beech (*Fagus sylvatica*) (Figure 1). Naturally, beech and mixed beech forests would comprise two thirds of the territory; other forest or wood communities would characterise nearly all the rest.

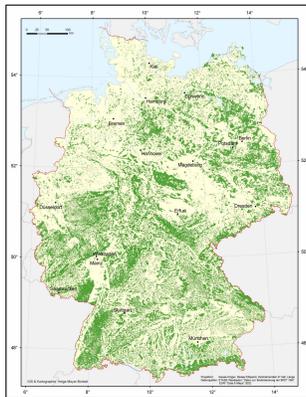


Figure 1. Forest area in Germany, © Federal Research Centre for Forestry and Forest Products Hamburg 2003

Germany is a federal state consisting of 16 *Länder* (states) (Figure 2). Each *Land* has its own forest and nature conservation authorities. They are separate institutions, but both together are responsible for the protection of German forests. Legal bases of their work are the federal framework legislation and the *Land* laws in the fields of forestry and nature conservation. The degree of ecosystems' naturalness is a widely used and accepted criterion of international nature conservation. In Germany the forest authorities of the *Länder*, partly in cooperation with the nature conservation authorities, have designed several classification systems for the assessment of forest naturalness. They are applied in the comprehensive forest habitat mappings of the *Länder* and in the National Forest Inventory II (NFI II).

Comprehensive forest habitat mappings have systematically been conducted since the late 1980s; the National Forest Inventory II runs from 2001 until 2004.

Germany is a federal state consisting of 16 *Länder* (states) (Figure 2). Each *Land* has its own forest and nature conservation authorities. They are separate institutions, but both together are responsible for the protection of German forests. Legal bases of their work are the federal framework legislation and the *Land* laws in the fields of forestry and nature conservation. The degree of ecosystems' naturalness is a widely used and accepted criterion of international nature conservation. In Germany the forest authorities of the *Länder*, partly in cooperation with the nature conservation authorities, have designed several classification systems for the assessment of forest naturalness. They are applied in the comprehensive forest habitat mappings of the *Länder* and in the National Forest Inventory II (NFI II).

Comprehensive forest habitat mappings have systematically been conducted since the late 1980s; the National Forest Inventory II runs from 2001 until 2004.



Figure 2. Administrative structure of Germany, © Federal Statistical Office 2002

II. ASSESSMENT OF FOREST NATURALNESS

II.1 FOREST HABITAT MAPPINGS

The goal of comprehensive forest habitat mappings is to evaluate forest habitats in respect of the nature conservational criteria 'naturalness', 'diversity' and 'rarity'. All habitats of a selected area are considered, unlike in selective forest habitat mappings where only particularly valuable habitats are investigated.

The forest habitat's degree of naturalness is measured by means of one to three criteria of naturalness. All of the 10 *Länder* that carry out comprehensive forest habitat mappings use the criterion 'naturalness of the vegetation composition' (Figure 3). The other two

criteria 'naturalness of the site development' and 'naturalness of the vegetation development' are applied less frequently.

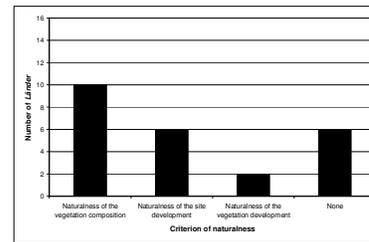


Figure 3. Frequency of the use of criteria of naturalness in the comprehensive forest habitat mappings of the *Länder*

The 'naturalness of the vegetation composition' is based on a comparison of the actual vegetation with an imagined (hypothetical) vegetation, in view of the present site conditions. In this context the modified or non-modified concept of the 'potential natural vegetation' according to R. Tüxen (1956) plays a

decisive role. The tree layer's species composition is the main subcriterion. By means of the criterion 'naturalness of the site development' site changes caused by direct human influence can be described. The criterion 'naturalness of the vegetation development' is directed at the type of rejuvenation – natural or artificial.

The scales of naturalness employed comprise on average five to six classes of naturalness (Figure 4). They mostly run from 'natural' through 'near-natural', 'far-from-natural' and 'alien-to-nature' to 'artificial'. Yet the definitions of these classes differ greatly.

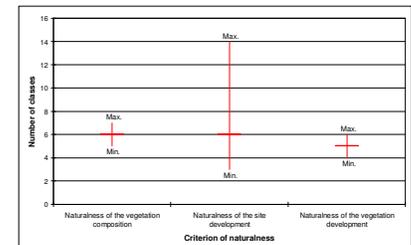


Figure 4. Number of classes of naturalness used in the comprehensive forest habitat mappings of the *Länder*

II.2 NATIONAL FOREST INVENTORY II

The NFI II is a sampling method which collects among other information data on the German forests' actual and potential natural tree species composition. These data make a naturalness classification of the complete German forest area possible.

III. PROSPECT

The presented examination was conducted in close correspondence to the COST Action E27 "PROFOR" (Protected Forest Areas in Europe – Analysis and Harmonisation). PROFOR is a part of the European COST programme (Cooperation in the field of Scientific and Technical Research), which is supported by the European Community and managed by the European Science Foundation. The main goal of COST E27 – PROFOR is to harmonise the wide range of protected forest areas used in European countries within the context of international systems of protected areas. A subgoal of the Action is to examine and to describe the role of the concept of naturalness in nature conservation throughout Europe. In this context, the research on the German and European assessment of forest naturalness will be intensified during the next two years.