

# **Forest Terminology: Living Expert Knowledge**

**How to Get Society to Understand  
Forest Terminology.**

Proceedings of the 6.03.02/SilvaVoc Group  
Session at the IUFRO World Congress 2000, and  
Selected Contributions on Forest Terminology

**Michèle Kaennel Dobbertin,  
Renate Prüller**

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Union Internationale des Instituts de Recherches Forestières  
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# Forest Terminology: Living Expert Knowledge. How to Get Society to Understand Forest Terminology

Editors: Michèle Kaennel Dobbertin, Renate Prüller

## Abstract

### **Forest Terminology: Living Expert Knowledge. How to Get Society to Understand Forest Terminology**

As a follow-up of the successful Workshop on Multilingualism and Expert Co-operation in Forest Terminology (MEXFT'98), IUFRO's Working Party 6.03.02 "Trends in forest terminology" and the SilvaVoc Project on multilingual forest terminology jointly organized a Group Session at the IUFRO World Congress 2000 in Kuala Lumpur. The first part of this issue of the IUFRO Occasional Paper series contains the presentations given at the IUFRO World Congress. The papers address issues of forest terminology, technical terms and definitions in relation to societal change, education, decision-making and their use by politicians. Better communication of terms and definitions is presented in a proposal of a multilingual forest terminology database designed for western and non-western languages. The second part relates to the diversity of forest terminology and shows some examples of terminological activities related to the meaning of the English *forest management* as against the German concept of *Forsteinrichtung*. An expert compilation of forest genetic resources terms and its translation into a practical web-application and a summary of ongoing activities of Working Unit 6.03.02, including new activities initiated at the Congress, are also presented. The annexes contain a compilation of definitions related to terminology, a questionnaire on terminological activities and cooperation, and short guidelines for terminology work in forestry.

**Keywords:** forest terminology, expert knowledge, societal change, decision making, definitions, multilingual terminology, terminology work, IUFRO World Congress

### **Terminologie forestière: Connaissances d'experts actives Pour une meilleure compréhension de la terminologie forestière dans la société**

Faisant suite au succès du Séminaire sur multilinguisme et coopération entre experts en terminologie forestière (MEXFT'98) le groupe de travail IUFRO 6.03.02 «Tendances en terminologie forestière» et le projet SilvaVoc sur la terminologie multilingue ont organisé conjointement une session technique lors du Congrès Mondial de l'IUFRO à Kuala Lumpur en 2000. La première partie de ce volume réalisé dans la série de publications IUFRO Occasional Paper regroupe les communications présentées à l'occasion du Congrès Mondial IUFRO. Les sujets abordés concernent la terminologie forestière, termes techniques et définitions relatifs au changement social, éducation, prise de décision ainsi que l'usage des termes et définitions par les hommes politiques. Une meilleure communication de termes et définitions est proposée par un projet de base de données multilingue conçue pour les langues occidentales et orientales. La deuxième partie porte sur les divers aspects de la terminologie forestière et présente quelques exemples d'activités terminologiques relatifs à l'usage du terme anglais *forest management* par rapport au concept allemand *Forsteinrichtung*. Une compilation d'experts de termes dans le domaine des ressources génétiques forestières et son application pratique sur le WWW, et un résumé des activités en cours du groupe de travail 6.03.02 y inclus de nouvelles activités initiées au Congrès Mondial sont également présentées. Les annexes contiennent notamment une compilation de définitions relatives à la terminologie, un questionnaire sur les activités et la coopération en terminologie forestière, et un bref guide de travail terminologique dans le domaine forestier.

**Mots clés:** terminologie forestière, connaissances d'experts, changement social, prise de décision, terminologie multilingue, travail terminologique, Congrès Mondial de l'IUFRO

## **Terminología forestal: Conocimientos de expertos activos Hacia un mejor entendimiento de la terminología forestal en la sociedad**

En seguimiento del éxito del Taller sobre „Multilingüismo y cooperación de expertos en terminología forestal, (MEXFT'98) el Grupo de Trabajo 6.03.02 “Tendencias actuales de terminología forestal“ y el proyecto SilvaVoc sobre terminología multilingüe organizaron en conjunto una sesión técnica en el Congreso Mundial IUFRO en Kuala Lumpur en 2000. La primera parte de este volumen en la serie de publicaciones IUFRO Occasional Papers contiene las contribuciones presentadas en el Congreso Mundial IUFRO. Los artículos tratan temas referentes a terminología forestal, términos técnicos y definiciones relativos a cambios en la sociedad, educación, toma de decisiones y el uso de términos y definiciones adoptados por políticos. Una mejor comunicación de términos y definiciones está incluida en una propuesta base de datos terminológicos multilingüe concebida para idiomas occidentales y orientales. La segunda parte de esta publicación presenta los diversos aspectos de terminología forestal gracias a unos ejemplos de actividades terminológicas, p.ej. sobre el sentido del término inglés *forest management* en contraste con el alemán *Forsteinrichtung*. Una compilación de términos en recursos genéticos forestales hecho por expertos y su conversión a una aplicación práctica WWW, así como un resumen de los actividades del Grupo de Trabajo 6.03.02, incluyendo nuevas actividades iniciadas en el Congreso Mundial, se han incluido también en esta parte. Los anexos contienen una compilación de definiciones relativas a terminología, un cuestionario sobre actividades y cooperación terminológicas, y una breve guía sobre trabajo de terminología en el ámbito forestal.

**Palabras clave:** terminología forestal, cambios en la sociedad, toma de decisiones, terminología multilingüe, trabajo de terminología, Congreso Mundial IUFRO

## **Forstliche Terminologie: Aktives Expertenwissen Zum besseren Verständnis von forstlicher Terminologie in der Gesellschaft**

Als Fortsetzung des erfolgreichen Seminars „Mehrsprachigkeit und Experten-Kooperation in forstlicher Terminologie“ (MEXFT'98) organisierten die IUFRO Arbeitsgruppe 6.03.02 „Aktuelle Entwicklungen in der Waldterminologie“ und das SilvaVoc Projekt über mehrsprachige Terminologie gemeinsam eine Fachsitzung beim IUFRO Weltkongreß 2000 in Kuala Lumpur. Der erste Teil dieser Ausgabe in der Reihe der IUFRO Occasional Paper enthält Vorträge, die beim IUFRO Weltkongreß gehalten wurden. Dabei handelt es sich um Themen der forstlichen Terminologie, Fachtermini und Definitionen mit Bezug auf Änderungen in der Gesellschaft, Unterricht und die Verwendung von Fachtermini durch Politiker. Verbesserte Vermittlung von Termini und Definitionen wird in einem Vorschlag einer mehrsprachigen Terminiologiedatenbank für westliche und östliche Sprachen gezeigt. Der zweite Teil behandelt unterschiedliche Aspekte forstlicher Terminologie anhand von einigen Beispielen, z.B. über terminologische Aktivitäten bezüglich der Bedeutung des englischen *forest management* gegenüber dem deutschen Begriff *Forsteinrichtung*. Eine von Fachleuten erstellte Sammlung zu forstgenetischen Termini und Definitionen und ihre Umsetzung in eine praktische Web-Applikation, sowie ein Resume der laufenden Aktivitäten der Arbeitsgruppe 6.03.02 mit neuen am Weltkongreß angeregten Aktivitäten runden diesen Band ab. Die Anhänge umfassen eine Zusammenstellung von Definitionen auf dem Gebiet der Terminologie, einen Fragebogen zu terminologischen Aktivitäten und Zusammenarbeit, und eine Anleitung zu Terminologearbeit in der Forstwirtschaft.

**Schlagwörter:** forstliche Terminologie, Expertenwissen, gesellschaftliche Veränderung, Entscheidungsfindung, Definition, mehrsprachige Terminologie, Terminologearbeit, IUFRO Weltkongreß

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## Foreword

Forest terminology work creates an awareness of the difficulties in technical communication between forest experts and decision-makers, politicians and the general public. It is a means to make efficient and clear communication possible and encompasses a variety of activities, ranging from the production of bilingual to multilingual glossaries, from the work on definitions to terminological studies, and from terminology database management to clearinghouse mechanisms. This Occasional Paper is a contribution towards a better understanding of what forest terminology work comprises and how it can provide further assistance to improving the dialogue in forestry.

Co-operation with forest experts is essential for high-quality terminology work. The IUFRO network of experts provides important partners for developing and reviewing definitions. IUFRO has always supported a multilingual approach in forest terminology. As it can be seen in this publication, most of its activities are oriented towards more than one language.

I am proud that IUFRO is that active in forest terminology. I would like to invite and encourage you not only to read the most interesting and diverse papers included in this publication, but also to participate in and make use of the work of 6.03.02 “Trends in forest terminology“, and the services of the SilvaVoc Project on multilingual forest terminology.

*Risto Seppälä*  
*President of IUFRO*



## **Editorial Notes**

This issue of the IUFRO Occasional Paper series gives special attention to bringing forest terminology work to the people and making them familiar with its broad variety of activities.

At the beginning it was planned to produce Proceedings of the papers presented at the IUFRO World Congress in Malaysia 2000. For some reason the production of this issue was delayed so that the editors decided to include some more information on other experiences with and activities in terminology, especially with regard to the collaboration of experts in specific forestry subject fields such as forest genetic resources and forest management.

For the above mentioned reason of bringing terminology more directly to the users, we have included in an annex a questionnaire and a short guide on terminology work.

## **Acknowledgments**

The editors would like to express their sincere thanks to all those who contributed to the production of this IUFRO Occasional Paper.

*Michèle Kaennel Dobbertin*  
*Renate Prüller*

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# **PART 1**

## **Proceedings of the 6.03.02/SilvaVoc Group Session at the IUFRO World Congress 2000**

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# Forest Terminology in Relation to Societal Change and Decision Making

John A. Helms

## *Abstract*

*The last decade has seen dramatic, world-wide changes in the diversity of societal perceptions of the uses, needs, and values of forests. Many societal groups, particularly in the conservation area, are strongly influencing the management and conservation of forests on both publicly- and privately-owned forests.*

*Forest management is also becoming increasingly diverse. In the United States it encompasses a variety of objectives represented by owners that include private (industrial and non-industrial), public (federal and state), native tribes, and organizations interested in forests as long-term financial investments. One could argue that this diverse set of ownerships represents a broader cross-section of societal needs and values than do the conservation groups.*

*Given this diversity in needs, uses, and ownership of forests, it is not surprising to find that forest terminology is used inconsistently. Sometimes, as in the case of such terms as sustainability, forest health, and clearcutting, this is probably deliberate to further the objectives of the user. Until recently, existing terminologies were commonly dominated by traditional focus on timber management. To fill the need generated by more diverse objectives and values, current documents are typically accompanied by independently-developed glossaries. Consequently, in the development of public policy and regulation it is common to find that terms are defined differently.*

*A standard, accepted, on-line dictionary is needed that is used as a basis for all documents, debate, general communication, and policy development. Such a dictionary should probably be developed and maintained by a group of forest terminology specialists representing diverse elements of the broad field of forestry. These experts would manage the peer review of definitions before incorporation. IUFRO should expand its leadership role in developing a standardized terminology, probably with regional variation of definitions, both nationally and internationally. The great advantage of an electronic dictionary is that it would be readily available and could be constantly updated and revised as terms are introduced or modified. Current issues needing to be resolved include the use of copyrighted definitions that are currently limited to use in the print medium, defining the extent of the field of forestry, and determining the extent of coverage of terms in each of the forest science disciplines.*

**Keywords:** Forest terminology, societal change, definitions, on-line dictionary

## **1. Introduction**

In North America over the past few decades there has been a dramatic change in the relation between society and forests. Following a sustained period of almost non-involvement the public has become increasingly concerned about the country's forests. Previously, if forests were thought about at all, they were regarded primarily as a source of wood; currently, society values forests for satisfying a wide diversity of ecological and societal needs and uses. This change has precipitated increasing dialogue regarding the manner in which forests are managed and conserved. However, the effectiveness of this dialogue is clouded by an inconsistent, inaccurate, and sometimes deliberately misleading use of forest terminology.

## **2. Societal Change and Current Issues**

The change in societal attitudes towards forests is due to many interacting factors. Populations and their elected representatives have changed from having a dominant, rural orientation to being urban-based, resulting in changes in priorities and values of both the people and their governing institutions. The middle and upper strata of people have become more affluent with increased time and funds available for recreation. Information (both factual and perceptive) about forests has become much more available through advanced forms of communication including television and the internet. There are growing concerns regarding forest conservation, preservation, and environmental pollution. There is recognition of the loss of habitat, especially old-growth forests, and concerns regarding the fate of associated threatened and endangered species of wildlife and plants. And there is a perception that forests have been mismanaged through the overuse of clearcutting. In general there is a lack of trust in the forestry profession based on a perception that forests have been overharvested to the detriment of other values. Some segments of society are actively advocating the elimination of all harvesting on the nation's public lands and increased regulation of private lands. In response, the USDA Forest Service and Bureau of Land Management are increasing emphasis on conservation and becoming less oriented towards timber harvesting. Industrial forest lands are increasingly considering some form of certification of sustainable forestry.

## **3. Decision Making**

To address societal concerns, public input is required before decisions are made on public forest lands. However, it is difficult to determine what constitutes "society" or "the public" as opposed to a few vocal segments. Decisions on forest management, of course, are made in the context of land ownership. In North America this includes various state and federal agencies, native American tribal groups, and both industrial and non-industrial private forest landowners. In this last category there are in the US some 10 million small private forest landowners each of whom has an individual set of priorities and objectives. It would seem that these diverse owners, collectively, would represent significant breadth of public opinion. Also, each state has its own policies and regulations that control the manner in which its forests are managed. Increasingly, however, there is a trend for individuals and organizations to challenge federal, state, and private decisions on forest management through litigation and for management decisions to be made by court actions. And there has been an increasing trend for organizations or coalitions to by-pass the legislative process by presenting public initiatives directly on state referenda aimed at imposing new laws constraining forest management. The days have long gone when decisions on forest management are made by forestry professionals and remain unchallenged.

#### **4. Relationship to Terminology**

Increased public interest in and discussion of forestry issues are to be welcomed, however effective debate is difficult when technical terms are used in an inconsistent manner. Inconsistent use of forestry terms is, however, also common within the profession. For example, there is no clear and uniform understanding of what, precisely, is meant by such fundamental terms as “forest”, or what exactly is encompassed within the field of “forestry”. Even the term “forester” is difficult to define because of the professional and legal differences between a “professional forester”, a “licensed forester”, and a “certified forester”. In a more technical sense, there is inconsistent understanding of what exactly is meant by “clearcutting” or “group selection”. Classical silvicultural systems are evolving to include a variety of structures that retain varying proportions of residual live trees. Because of these and other inconsistencies it is common for technical reports to include independent glossaries. And as forestry broadens to encompass new difficult-to-describe concepts such as ecosystem management, sustainability, and forest health it not surprising that communication is unclear and imprecise.

It is no wonder, therefore, that there is confusion in the development of public opinion, in the interpretation of management plans, and in the development of forest policies when the same terms are used with a variety of meanings. Similar confusion occurs when the same condition is described using different terms.

#### **5. Issues in Developing Terminologies**

One of the problems in developing forestry dictionaries is to decide what constitutes the field of forestry. In previous decades, forestry was largely prescribed in terms of timber management and utilization of forest products. In recent decades, the field of forestry has expanded to provide more focus on other attributes of the forest including not only the trees but such components as the soil, vegetation, wildlife, aquatics, and environment. Forestry now includes biological, managerial, quantitative, industrial, and societal aspects. Thus there is increasing difficulty in distinguishing between a dictionary of forestry and a dictionary of natural resources. Also there are difficulties in determining to what extent a dictionary of forestry should include specialized terms that deal with details of forest sciences within such fields as forest soils, forest entomology, forest tree physiology, forest economics, pulp and paper chemistry, etc.

The question of publication of terminologies presents special considerations. Traditionally, dictionaries are published in book form, immediately become dated, and their usefulness rapidly diminishes over time. Characteristically, dictionaries are not revised sufficiently frequently due to the magnitude of the task and costs involved. A potential solution is to publish dictionaries electronically and make them available on the internet. This has the great advantage of permitting them to be readily available, searchable, and continually updated. Terms can be readily revised as definitions are refined through usage and new terms can be added. Linkages can be provided to terminologies in other countries or regions. The current disadvantages of electronic dictionaries includes the inability, in some cases, to obtain copyright permission from some sources for individual terms to be published electronically. Also, there are concerns whether electronic publishing will permit the recouping of costs of development, review and compilation. Quite possibly, some users might prefer to have dictionaries available both in book and electronic form. However, the uncertainty whether publishers can recoup costs of publication and obtain a margin of profit is a deterrent to the preferred alternative of making dictionaries available in both formats.

## **6. Needs**

It seems clear that to conduct meaningful communication both society and the profession need to have ready access to, and use, a standardized technical dictionary. Hopefully, the appearance of the Society of American Foresters' *The Dictionary of Forestry* (Helms, 1998) will encourage standardized use of definitions by both professionals and public throughout the US. However, the problem remains and becomes exacerbated when attempting clear communication of technical forestry issues among countries that may define terms somewhat differently.

Although forest terminologies exist in many countries it seems desirable that, to facilitate technical and professional communication, each country have a standing terminology committee charged with obtaining and maintaining a current dictionary of forestry terms. These committees would set up procedures for on-going peer review of terms, list definitions, and make arrangements for publication or distribution.

Because of IUFRO's current programs in multilingual terminologies and its established Working Party (6.03.02 "Trends in Forest Terminology") there is a special opportunity for IUFRO to provide leadership, coordination, and guidance on terminology standards, style, and format. The field of forestry is a world-wide endeavour and cooperation is needed to develop consistent terminology. IUFRO has the prestige, experience, and credibility to help resolve differences of opinion and to ensure inclusion of diversity of viewpoint and usage. Perhaps IUFRO could encourage country or regional leadership in the development of compatible definitions that could enhance its efforts in developing comprehensive and accurate, multilingual terminologies.

## **7. Conclusion**

Current debates on forestry issues are clouded by inconsistencies in the use of forestry terms. The science and practice of forestry, as well as its educational programs would be enhanced if greater focus was placed on the importance of developing and maintaining current terminology. An opportunity exists for IUFRO to enhance its leadership role in this area by facilitating the development and standardization of terminologies at the local level.

## **8. Reference Cited**

Helms, John A. 1998. *The Dictionary of Forestry*. Society of American Foresters, Bethesda MD, USA. 210 p.

# Proposal of A Multilingual Forest Terminology Database Designed for Western and Non-Western Languages

Mitsuo Matsumoto

## *Abstract*

*SilvaVoc, IUFRO's clearing house for multilingual forest terminology, is working to establish a forest terminology database to be published on the Internet. Non-Western languages such as Japanese, however, have some problems in multilingual databases, and current web browsers have a limited capacity to manage multilingual functions. For example, western computers cannot display Japanese characters correctly on the monitors, because they cannot manage two-byte code and have no Japanese font data.*

*SilvaVoc-J, which is a partner of SilvaVoc in Japan, developed an experimental system of a multilingual forest terminology database. This system was based on one of the solutions proposed by the author at the IUFRO international workshop "Multilingualism and Expert Cooperation in Forest Terminology" (MEXFT'98). It consists of three functions. The first function is a World Wide Web server, the second a database server, and the third one is a function to convert Japanese characters' fonts to raster images automatically.*

*The system works as follows. First, a user queries about a term to the Web server from a client computer. Then, the Web server requests to search the term to the database server via Common Gateway Interface (CGI). The database server carries out the search and sends the result to the Web server via CGI. If the result term contains Japanese two-byte characters, it is converted to a raster image on the way to the Web server from the database server. Finally, the Japanese term is displayed as an image in a Web browser on the client computer.*

*The system does not require Japanese font data and special browsers on client computers. In other words, Japanese characters can be displayed in popular Web browsers such as Netscape Navigator and Microsoft Internet Explorer on any countries' computers. Furthermore, the method is available not only for Japanese characters, but also for characters of other non-Western languages. Therefore, the system also makes it possible to add other non-western languages to the multilingual forest terminology database.*

*The experimental system of a multilingual forest terminology database will be demonstrated in the presentation.*

**Keywords:** Forest terminology, multilingual terminology database, non-western languages, two-byte code, SilvaVoc-J



## **1. Introduction**

SilvaVoc, which is IUFRO's clearing house for forest terminology, is building a multilingual forest terminology database and has planned to publish it on the Internet (Prüller, Kaennel Dobbertin, 1999). However, there are several problems regarding the development of the database and the WWW publishing system, including the management and handling of non-Western languages on the Internet.

The author discussed these problems and proposed several solutions at the IUFRO international workshop "Multilingualism and Expert Cooperation in Forest Terminology (MEXFT'98)" (Matsumoto, Tsuyuki, 1999). Based on the preliminary study, SilvaVoc-J, which is a partner of SilvaVoc in Japan, developed an experimental system of a multilingual forest terminology database.

This study discusses solutions and proposes an experimental system for a multilingual forest terminology database. The development of the experimental system is supported by SilvaVoc-J financially, and by Mitsubishi Space Software Co. Ltd. technically.

## **2. Existing Solutions**

This section summarizes the discussion and solutions proposed in Matsumoto, Tsuyuki (1999).

Building a multilingual database and publishing it on the Internet requires, more than anything else, management and treatment of character codes and fonts. If the wrong codes or fonts are chosen for a text, computers will display illegal characters. Even if correct codes are chosen, computers without proper fonts may display illegal characters. Characters used in Western languages can be mapped with just one byte, and there are ISO standardized character sets of Western languages in a one-byte system. On the other hand, non-Western languages such as Japanese and Chinese usually have many characters, and they are represented by two-byte code systems. Moreover HTML3.2, which is the most popular version of HTML for WWW, does not support multilingualism fundamentally.

To realize multilingualism in a terminology database and on the Internet, the following solutions were proposed: (1) a character image method, (2) Java applet with Unicode method and (3) HTML4.0 with Unicode. Descriptions of these solutions are as follows.

The character image method treats characters as images by converting character codes into raster images. Although this method is independent from operating systems, computers, WWW browsers, and font data, it is impossible to re-use the search results by "cut and paste" because they are not character codes but images. The delegate method, an advanced character image method, converts character codes into raster images automatically.

The Java applet with Unicode method needs an original Java applet that displays non-Western characters using Unicode on WWW browsers. One advantage of this method is that multilingualism can be realized for HTML3.2 environments, by Java applets. Unfortunately, it is necessary to develop an original Java applet.

The HTML4.0 with Unicode method is used to develop WWW pages in the HTML4.0 environment with Unicode. Unicode is a universal character code and set including non-Western languages such as Japanese, Chinese and Arabic (Unicode Inc.). According to the definition of Unicode version 2.0, the length of character codes is variable, and they are coded by two or four bytes. Though HTML4.0 fundamentally supports multilingualism and Unicode and has a command for languages (WWW Consortium), it was just standardized in December 1997, and it is still not widely used.

The selection of a method depends on the schedule of completion, and on the spread of new technologies such as HTML4.0 and Unicode. In all cases except the character image basic method, the structures of the databases are common. Therefore, after completion of the database, a web publishing method will have to be chosen by considering the status of the Internet at that time.

### 3. Development of An Experimental System

#### *A Method To Manage Non-Western Characters*

Two years have passed since I presented the solutions mentioned above. How is the solution of multilingual applications on the Internet today? Surprisingly, technologies such as Unicode have not become popular yet on the Internet, and are rarely used in ordinary WWW sites. The reason might be that ordinary users do not require the new technologies, even if specialized fields such as terminology accepted them.

The Java applet method is available on HTML3.2. However, it takes time to display the results of searches, and quick responses cannot be expected because the WWW server sends both Java applet and font data to display the characters to client computers through the Internet.

Considering the present situation, I decided to adopt the delegate method, which is an advanced character image method. However, an independent delegate server is excessive if only conversion function of non-Western characters is required. Thus, I designed a new system that has not only a database and WWW server, but has also a function of a delegate server to convert character codes into a raster image in a computer.

### 4. Outline of the system

Figure 1 shows the structure and data flow of the system. First, a user asks the WWW server about a term from a client computer. Then, the WWW server sends a request to search the term to the database server via a PHP module. PHP, hypertext preprocessor, is a server-side, cross-platform, HTML embedded scripting language (Zend Technologies Ltd.). The database server carries out the search and sends the result back to the WWW server via the PHP module. If the result term contains Japanese two-byte characters, it is converted to a raster image in real time on the way to the WWW server from the database server. Finally, the Japanese term is displayed as a raster image in a WWW browser on the client computer.

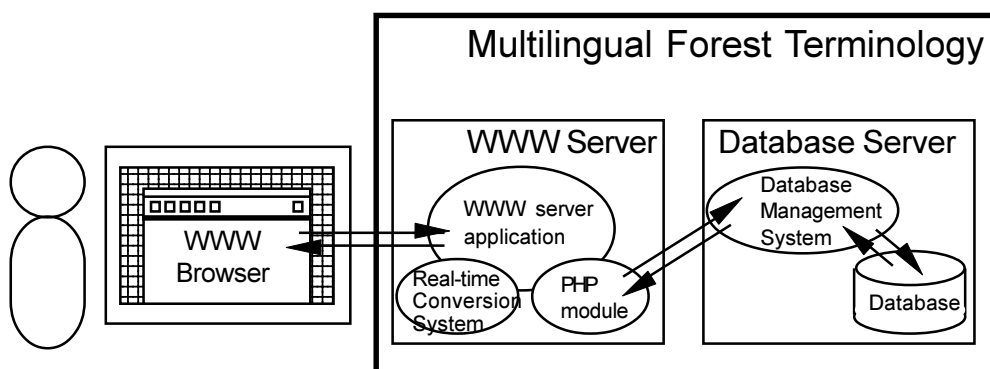


Figure 1. Structure and data flow of the system

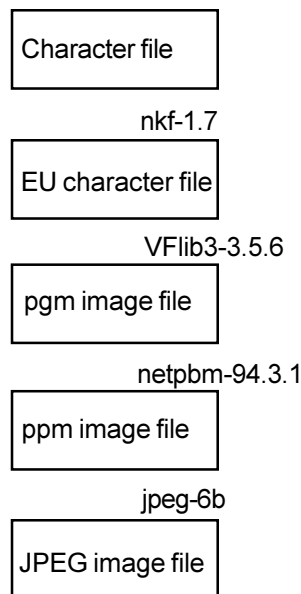
**4.1. Software**

We recommend to use a UNIX machine as server for this system, as the system requires both WWW server and database server functions. Here lies the advantage of UNIX. Since an application requires FreeBSD, which is a free UNIX operating system (OS) for IBM-compatible personal computers (PCs), it was adopted as the OS. Table 1 shows the software list to build the system. Postgre was chosen as the database application because it is reliable and popular on UNIX.

**Table 1.** Software of the terminology server

OS	FreeBSD
WWW server	apache_1.3.9 Php-3.012jp-beta3
Database server	postgresql-6.5.1
Real-time conversion system	nkf-1.7 VFlib3-3.56 Freetype-1.1 T1-0.9.1 kpathsea-3.2 netpbm-94.3.1 jpeg-6b

The conversion system is composed of not one but several applications that are opened as freeware. Figure 2 shows the applications and mechanism to convert character codes into a raster image. The conversion system was named Real-time Conversion System (RCS).



**Figure 2.** Flow chart of the conversion system

## 4.2. Hardware

Recent PCs have a powerful CPU such as Intel Pentium III, enough RAM and hard disks to drive and manage WWW servers and database servers on UNIX OS. Moreover, they are less expensive than UNIX workstations. So I decided to use a PC with an adequate hard disk and a backup storage as a server machine of the terminology server. Table 2 shows the hardware list of the experimental system.

**Table 2.** Hardware of the terminology server

CPU	Intel Pentium III 450MHz
RAM	256MB
Hard disk	Ultra Wide SCSI 9GB
CD-ROM	Plexor PX-32TSI
Floppy disk drive	TEAC FD-235HG
DAT	HP Sure Store DAT 8i DDS-2
Video card	Matrox Millenium2 PCI 4MB
SCSI card	Adaptec AHA-2940U
etc.	Network card Intel EtherExpressPro/100+ (100Base-TX) Monitor 17" color CRT Keyboard Mouse

## 4.3 Data and database design

The experimental system uses a tentative data set which has been converted from the SilvaTerm database, Terminologie der Forsteinrichtung (Griess, Kurth, 1998) and Terminology of forest management planning (Naito, 2000).

The database structure of the experimental system is shown in Figure 3. The structure is designed to be simple for easy development, and different from that of the SilvaTerm database because the main aim of this system is to make an experimental RCS.

## 5. Demonstration

Here I demonstrate the system and explain how to use the experimental system of multilingual forest terminology database with screen pictures.

When you visit the top page of the multilingual forestry terminology database, you will see the page shown in Figure 4. First, you choose the language to search on the screen, either German, English, Japanese, French, Spanish, Italian, Portuguese or Hungarian. Then you choose number of results in a page to set a convenient size for your computer monitor.

This system provides two search methods: "Keyword search" and "First letter search". For keyword search, you input a keyword to search and click on the search button, then terms that contain the keyword are searched. For first letter search, you click on an alphabetical letter, then terms that have the first letter are searched.

The results of both search methods are listed in a result page. If there are many results, every 10, 20, 50 or 100 terms, which you chose in the previous page, are listed as shown in Figure 5. If you are interested in a term, click on it. Then equivalent terms in every language are listed as shown in Figure 6. In this page, Japanese characters are displayed as a raster image using RCS, even if you use Western language computers. If you click on a term, its definition appears as shown in Figure 7. The figure shows that raster images created by RCS have enough resolution to be readable.

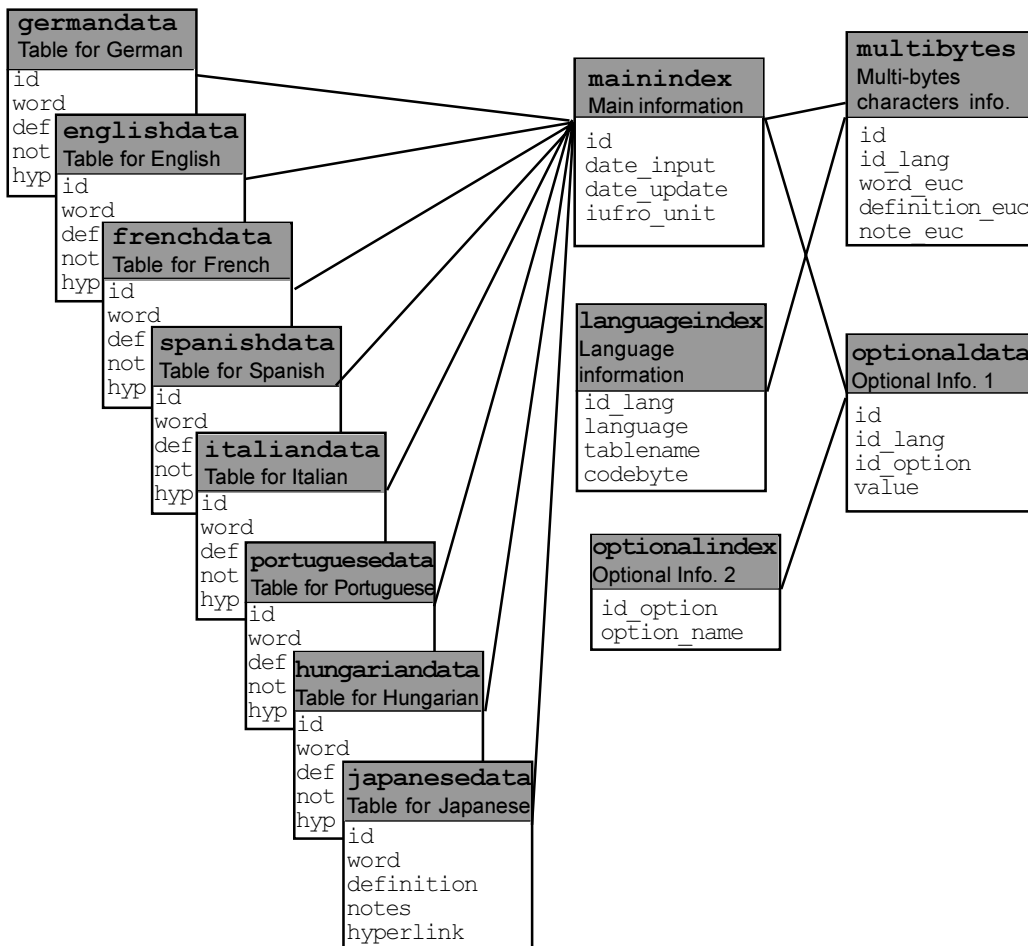


Figure 3 Database structure of terminology


## 6. Discussion and Conclusion

Because real-time conversion from character codes to a raster image seems to take time and bad responses could disturb daily use, I examined the conversion speed of RCS. One hundred Japanese characters, which is equivalent to 200 bytes, were converted to a raster image in 0.75 second. Even in a good Internet environment, it takes several seconds to read and display an ordinary WWW page. Thus the conversion speed is not a problem.

The experimental system consists of a WWW server, a database server and RCS. Except for RCS, the system could be regarded as an ordinary database system on the Internet. RCS is composed of several software programs that work in a UNIX environment, and can be ported to other database systems easily. Therefore, it is not difficult to port RCS to the SilvaTerm database system.

The system does not require either Japanese font data or special browsers on client computers. In other words, Japanese characters can be displayed in popular Web browsers such as Netscape Navigator and Microsoft Internet Explorer on computers in any country. Furthermore, the method is available not only for Japanese characters, but also for characters of other non-Western languages. Therefore, the system also makes it possible to add other non-Western languages to the multilingual forest terminology database.

# Multilingual Forest Terminology Database



**1. Language**

English ▼

**2. Maximum number of data showing on a page**

10 ▼

**3. Search**

**Keyword search**

Type a keyword to search,  
forest|

click on SEARCH button.

SEARCH RESET


**First letter search**

Click on a first letter of terms to show a list.


A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

SilvaVoc  
IUFRO

**Figure 4.** Top page



**Multilingual  
Forest  
Terminology  
Database**




JAPAN


**Keyword search result**

"forest" made 59 hit(s) on "English" table:  
Showing 1-10 of 59 hit(s)

Term	Definition
<b>actual forest [trans.]</b>	"The original German concept designates the forest, as represented by volumetrical and structural measurements, on a particular survey date."
<b>broadleaved forest</b>	A forest composed of mainly -> broadleaved trees/ -> hardwood trees.
<b>commercial forest</b>	A forest managed primarily for its merchantable produce.
<b>coniferous forest</b>	A forest composed mainly of -> conifer(ous) trees.
<b>continuous cover forest [trans.]</b>	A highly structured forest ecosystem with continuous tree cover on the total forest area.
<b>coppice forest</b>	"Woodland which has been regenerated from shoots formed at the stumps of the previous crop trees, root suckers, or both, i.e., by vegetative means. Normally grown on a short rotation for small material."
<b>demonstration forest</b>	A forest which is managed primarily for the provision of educational opportunities.
<b>forest</b>	"1) Ecology: generally an ecosystem characterized by a more or less dense and extensive tree cover. More particularly, a plant community predominantly of trees and other woody vegetation, growing more or less closely together. 2) Silviculture/forest management: an area managed for the production of timber and other forest produce, or maintained under woody vegetation for such indirect benefits as protection of catchment areas or recreation."

Figure 5. Result page





**Equivalent terms of English "forest"**

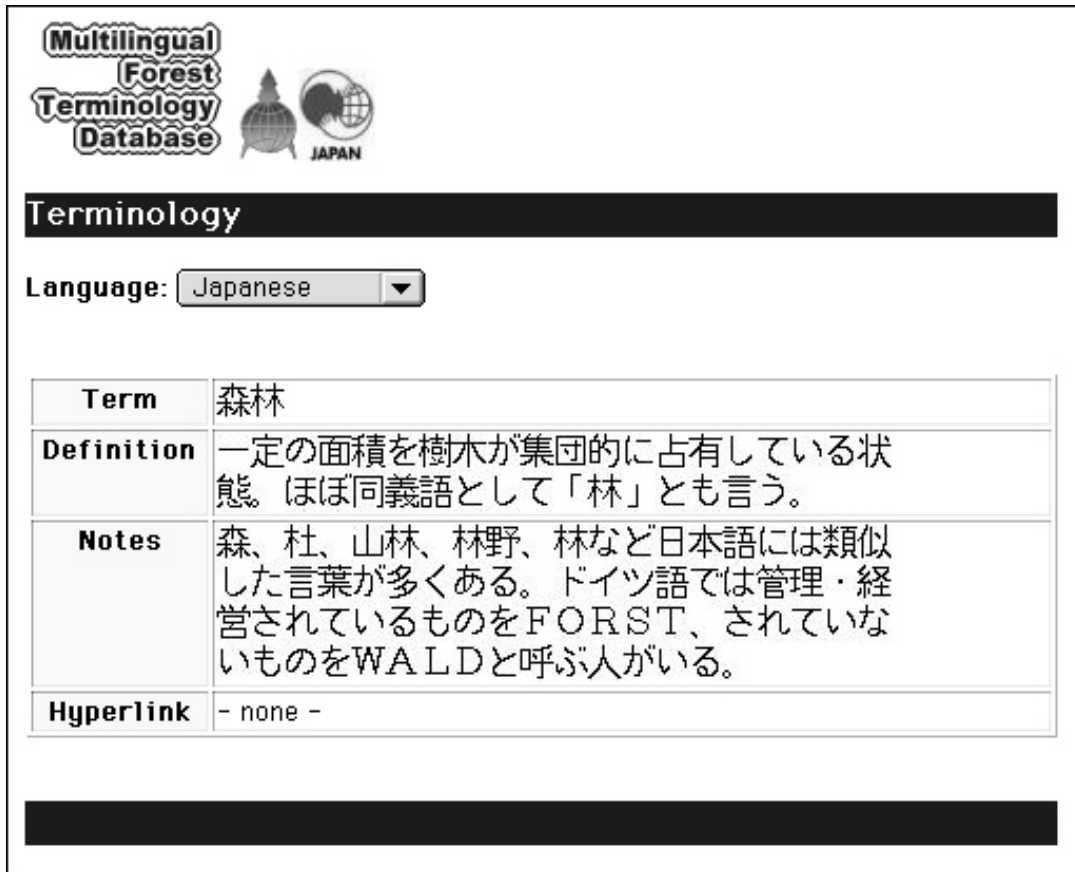
**Term** : forest (English)

**Definition** : "1) Ecology: generally an ecosystem characterized by a more or less dense and extensive tree cover. More particularly, a plant community predominantly of trees and other woody vegetation, growing more or less closely together. 2) Silviculture/forest management: an area managed for the production of timber and other forest produce, or maintained under woody vegetation for such indirect benefits as protection of catchment areas or recreation."

<b>German</b>	Wald
<b>English</b>	forest
<b>Japanese</b>	shinrin 森林
<b>French</b>	forêt
<b>Spanish</b>	bosque
<b>Italian</b>	foresta
<b>Portuguese</b>	floresta
<b>Hungarian</b>	erdő

**Figure 6.** Equivalent terms page





The screenshot shows the 'Multilingual Forest Terminology Database' interface. At the top left is the logo with a globe and the text 'Multilingual Forest Terminology Database'. To its right is a logo with a globe and the text 'JAPAN'. Below the logo is a black bar with the word 'Terminology' in white. Underneath is a 'Language:' label followed by a dropdown menu set to 'Japanese'. The main content is a table with four rows: 'Term', 'Definition', 'Notes', and 'Hyperlink'. The 'Term' is '森林'. The 'Definition' is '一定の面積を樹木が集団的に占有している状態。ほぼ同義語として「林」とも言う。'. The 'Notes' is '森、杜、山林、林野、林など日本語には類似した言葉が多くある。ドイツ語では管理・経営されているものをFORST、されていないものをWALDと呼ぶ人がいる。'. The 'Hyperlink' is '- none -'.

<b>Term</b>	森林
<b>Definition</b>	一定の面積を樹木が集団的に占有している状態。ほぼ同義語として「林」とも言う。
<b>Notes</b>	森、杜、山林、林野、林など日本語には類似した言葉が多くある。ドイツ語では管理・経営されているものをFORST、されていないものをWALDと呼ぶ人がいる。
<b>Hyperlink</b>	- none -

Figure 7. Definition in Japanese

## References

- Griess, O., Kurth, H., 1998. Terminologie der Forsteinrichtung. Begriffe und Definitionen in deutscher Sprache, IUFRO World Series Vol.9-de, IUFRO Secretariat, 168 pp.
- Naito, K., 2000. Terminology of forest management planning. Terms and definitions in Japanese, IUFRO World series Vol.9-jp, IUFRO Secretariat, 166 pp.
- Matsumoto, M., Tsuyuki, S., 1999. Problems and solutions to manage non-western languages in a multilingual database and in the WWW, Forest snow and landscape research 74, 2: 237-241.
- Prüller, R., Kaennel Dobbertin, M, 1999. Terminology activities at IUFRO, Forest snow and landscape research 74, 2: 219-226.
- Unicode Inc., What is Unicode?, < <http://www.unicode.org/unicode/standard/WhatIsUnicode.html> >
- Zend Technologies Ltd., PHP: Hypertext preprocessor, < <http://www.php.net/> >
- WWW Consortium, Non-western character sets, languages, and writing systems, < <http://www.w3.org/International/> >

# Terminology as a Way to Communicate Values Sustainable Forest Development: Vision of the World in the 21<sup>st</sup> Century

Nérida Puentes Alvarez

## *Abstract*

*Language is a working instrument common to all subject specialists, a working tool and a means for communicating scientific findings.*

*The objective of the Programme of Foreign Language of the Technical Center of Higher Education (at the University of Pinar del Río, Cuba) is to elaborate versions and summaries of expert materials in Spanish with an adequate usage of the Spanish mother tongue.*

*The educative project as main working document in the three dimensions, the instructive, sociopolitical and extension aspects, serves as a basis for integrating English as a foreign language programme with the other expert programmes.*

*Facing the challenge of the globalization, the correct usage of the language as a distinctive feature of the national identity and the valorization of linguistic variants are of major concern to the project leaders. The strategy was set to use Terminology as a way to integrate English into other teaching programmes in the University of Pinar del Río. This strategy consists of several phases, resulting in the integration of the students in research work, systematic terminology work and in the organization and elaboration of concept systems of the contents of the several subjects. With this strategy the transdisciplinary approach of the English technical language course leads, via systematic terminology work, to the formation and strengthening of general and professional values which the students need to have as members of a society that has to face the challenges of a new century.*

*Sustainable forest development as a paradigm to reach sustainability is the perfect conceptual world. Terminology work takes into account the scientific perception of the world through knowledge-generating processes in the construction and permanent reconstruction of the student's "vision of the world". It aims at providing an education which allows to perceive semantic and conceptual features of sustainable forest development. These combined language and subject field teaching programmes are intended to prepare the students to the challenges that they will have to face as future subject specialists.*

**Keywords:** Forest terminology, Spanish language, English language, teaching programmes, terminology work, sustainable forest development

## **1. Introduction**

The educational programmes offered at the University of Pinar del Rio, Cuba, have been conceived with the double idea: 1) to give the students the guidance and the possibility to grow intellectually and socially; and 2) to provide them with the technical knowledge, confidence and skills they will need for leadership roles in the forestry national field.

Sustainable forest management is used as the basic concept when formulating the objectives for the disciplines and teaching programmes of the academic year. Enhanced reading and communicative skills are the most significant results of the English Foreign Language Program in Cuban Technical Universities. In order to respond far better to the need of improved technical communication, we elaborated a strategy for getting the students to know forest terminology.

## **2. Terminology – Communication of Values**

### ***2.1 Terminology: basic concepts***

The existing literature tends to distinguish at least three meanings of the word terminology. In this paper we use terminology as “study of and the field of activity concerned with the collection, description, processing and presentation of terms” (Sager, 1990) understanding the terms as lexical units belonging to specialized areas of usage of one or more languages. When teaching terminology it is important to insist on the distinction of term and concept: they can be defined as sign and meaning respectively, indicating that “a concept is a unit of knowledge that contains the reference attributes called term (Faulstich, 1999).

In this way, knowledge can be transmitted by the language. Terms can be used if the user possesses the configuration of knowledge which determines the role of the term in a structured system. We expand the knowledge of the subject field by the addition of new concepts. “The concept has to be placed into its knowledge structure which delimites and confines it, it has to be named so that we can clearly refer to it, and it has to be defined as an act of clarification, confirmation or fixation of an item of knowledge” (Sager, 1990). Consequently we expand and modify our knowledge having the necessary elements to reflect the world in the way it is.

### ***2.2. Special subject languages***

For any given language a wide range of variation of terms is available, but, within it, the social norm determines the criteria for selection of terms used according to the type of communication. In terminology, there are two ways for analysing the terms in a discourse: one concerns the synchronic aspect, where variants present the same referential meaning. And the diachronic, i.e. the historic aspect, enables us to systematize the changing lexico-terminological structures, to reconstruct the conceptual structures of the analyzed period of time. This is the case of the early definition of *sustainable forestry*, concentrated on the timber resources, with management aimed at the “sustained yield” of a limited number of wood products. And recently, the term sustainable forest management that recognizes the importance of other products and services provided by the forest, and particularly those of broader social concern.

### ***2.3. Sustainable Forest Management***

After the Rio Summit, *Sustainable Forest Development (SFD)* arose as a paradigm to follow, understanding it as the development that meets the needs of the present without

compromising the ability of future generations to meet their own needs. It is assumed that *SFD* is the forest component of sustainable development.

“There is a high level of understanding that as the health of forest deteriorates, all of its functions and services are threatened. The effects on environment, economy and society interconnect and affect, transcending national boundaries, and undermining our ability to sustain forest and development. People understand these issues, worry about them and are increasingly willing to change the way things are done. Much of the existing controversy about this topic derives from differing interpretations of the terms” (WCFSD, 1999).

This is the reason why students should acquaint the ability to use the different definitions of *SFM*, to have them establish the differences and similarities in their semantic features, and allow them to come to their own conclusions.

Consequently, the following definitions, among others, serve as a basis for discussion: ITTO definition of *SFM*: “the process of managing a forest to achieve one or more clearly specified objectives of management with regard to the production of a continuous flow of desired forest products and services, without undue reduction of its inherent values and future productivity and without undue undesirable effects on the physical and social environment” (ITTO, 1998). Another example is the definition of the Ministerial Conference of Helsinki: “Good management and utilization of forest and forested areas in such a way and at such intensity that their biological diversity, productivity and regenerative capacity, their vitality, and their capacity to fulfill, now and for the future, their pertinent ecological, economical and social functions at the local, national and global levels, be maintained, without thereby doing harm to other ecosystems (WCFSD, 1999)”.

There is a multitude of initiatives to define the major components of sustainable forest management, but the majority have the following elements as a common denominator: A legal policy framework, a sustained and optimal production of forest products, an environmental management system, social issues, and some considerations related to plantations.

### **3. Terminology and Teaching**

#### ***3.1. The University of Pinar del Río***

The University of Pinar del Río is situated in Pinar del Río Province, Cuba. It is the only faculty of forestry in the country.

The Educative Project with its three dimensions, the curricular, sociopolitical and extracurricular activities is the most important working document for the technical Universities in Cuba. The objectives of the disciplines, courses and lectures of the curriculum are formulated in view of the professional challenges the students will face in the forest. Starting from the necessity of an integral management of ecosystems and forest production for the sustainable development of forest production” (Hernández, 2000), the future profession is the guiding theme for the curriculum design. For every academic year a special course of work and labor in the field, where the students practice under real conditions in the forest, is foreseen as part of the overall curriculum. This approach allows the interaction of all the year subjects and is called the Principal Integral Discipline (PID).

On the basis of the general methodology prepared by the teaching team, the English Department identifies the actions to develop in methodological meetings, scientific sessions, and Workshops. According to the content of the educative

programme they establish the knowledge and value systems for the English language and the terminology courses.

### ***3.2 The combined teaching of forestry and terminology – a unique experience***

*Sustainable forest management* is the objective set and the aim to achieve. Consequently, the overall educative objective of studies in forestry aims at training students “to act in the forest according to ethical principles and to apply their knowledge and skills to achieve sustainable forest management with a high scientific level and creativity ... characterized by the love for the forest, the forest work ... introducing a sustainable production process” (Hernández, 2000). On the other hand, a future graduate student should “apply the Forest Sustainable Management to obtain the maximum production of direct and indirect forest goods and services, applying techniques of Sustainable Forest Planning, Silviculture, and Forest Harvesting required for the different ecosystems and taking into consideration its socioeconomic aspects and its conservation, protection and the environment ...” (Hernandez, 2000).

The content derives from the general objectives and is adapted to the educative programme of the academic year. As we have said before, the PID enhances the specialized students training from the first year of study through the entire University live and its objectives coincide with the objective of the year, so they reflect the goal to achieve according to the students’ level. In the fourth year, for example, they receive the following disciplines: Soil Sciences, Silviculture, Forest Harvesting, Forest Protection, Forest Economics, Sustainable Management of Forest Ecosystems, while Sustainable Management of Forest Ecosystems is the Principal Integral Discipline. All of the year subject contribute to it, but the attention is focused on silviculture.

The same happens in the other years, where the attention is focused on the forest production, forest management planning and forest sustainable development respectively. In the fifth year the students elaborate a project in which they integrate all the above mentioned aspects in a forest enterprise. These aspects are what the English component of the PID is focused on, having the students develop their terminological work on this matters and having them present their glossaries as part of their Work Report. Taking into account this experience the strategy was set to introduce Terminology in the University of Pinar del Rio, as a way to integrate the English language into other teaching programs.

### ***3.3 The strategy for terminology teaching at the University of Pinar del Río***

At the University of Pinar del Río we are convinced that the correct usage of language, mother tongue or foreign working language, is of extreme importance if we want to respond to the challenges of the globalization of the scientific world to ensure better understanding of the national variants of the technical language of forestry. This strategy consists of several phases, resulting in the integration of the students in research work, systematic terminology work and in the organization and elaboration of concept systems of the contents of the several subjects. With this strategy the transdisciplinary approach of the English technical language course leads, via systematic terminology work, to the formation and strengthening of general and professional values, which the students need to have as members of a society that has to face the challenges of a new century.

The fundamental idea and the main objective for 2006 is that in all the studies the integral disciplines are being strengthened via their systematic terminological study, and the hierarchical organization of the conceptual systems. The University through its marketing policy encourages all its divisions, research groups and dependencies to

work on the creation of glossaries, dictionaries as a result of their course works, diploma, master and Ph.D. thesis.

The goal we intend to achieve is to guarantee the integral formation of the province and university professionals with a high foreign and mother language qualification via creation of terminological applications, which integrate different subject matters. Terminology, as an interdisciplinary science, is thus used as an instrument of work and improvement of language skills. This approach is put into action in all the University Units of Strategic Action that include: Professional formation, Postgraduate Education, Science and Technology, International Affairs, Extracurricular University Activities, Information and Computer Sciences, Leadership training, Human Resources and Financial Support, etc. Professional Formation is the unit of greatest importance and where the highest impact is obtained. Besides the technical formation, it includes the creation of terminological applications, e.g. dictionaries, glossaries, etc. Terminology work is included in the curriculum and part of the scientific work the students are performing. We develop lectures, optional courses for terminological training and recommend to integrate terminological applications into their course and diploma works. Students who acquired high proficiency in terminology work are guided to do bilingual terminology work. A terminology group session is planned for the Annual Students' Scientific Conference. Postgraduate Education comprises a set of activities, which include a lecture explaining the professors the strategy, the development of applications as part of the masters and doctoral thesis and the teaching of terminology courses. Special Courses offered training in specific subject areas: Terminology of Environmental Education, Terminology of Environmental Training and Terminology of Forest Sustainable Development. In Science and Technology, the English Language Department professors are strongly promoting research work in applied linguistics. An International Conference "Language, Communication and Development" is organized as part of these efforts and is held every two years, with a Terminology workshop as main feature.

For the extracurricular activities terminology work in collaboration with provincial institutions is encouraged. The province commission is in charge of the establishment of norms and standards, together with other scientific and production centers, and the Universities. The most important concepts are broadcasted by the University Radio Station, e.g. Forest Management Unit, Criteria and Indicators, Certification body, Participatory Management, etc. A permanent section in the Language Department Bulletin is dedicated to forest terminology.

The targets in information and informatics are addressed to the optimum use of the university computer net. It allows to use and distribute the obtained terminology data and results among all university computer laboratories. The strategy also encourages the professors to write about the different terminological problems of their subject field and insert at least an article in an Internet database. As our approach promotes the creation of terminological applications and records as part of course works, diploma thesis; it is most likely that we are going to have the necessary raw material for establishing a Terminological Data Bank. This is our plan for 2006. We want to respond to the growing need of communication and would like to be prepared to exchange information with the existing local and worldwide terminological data banks. The absence of dictionaries, glossaries, thesauri, and other terminological working documents of the studied subjects in the province and the growing need of communication and exchange of information are conditions that are going to help the proposed establishment of a terminological data bank.

The Foreign Languages Department maintains working relations with important national and international institutions such as “Unión Latina, RITERM (Red Iberoamericana de Terminología), REALITER (Red Panlatina de Terminología), University of Brasilia, IULA (Institut Universitari de Lingüística Aplicada, Spain), Group of Terminological Studies of University Havana, Institute of Linguistics and Literature, Center of Applied linguistics in Santiago de Cuba, etc. Hereby we will be able to follow the internationally approved procedures for terminology work.

#### 4. Conclusion

Language is a working instrument common to all subject specialists, and a means to communicate and spread the scientific results. So terminology work becomes a necessary subject if you want to understand, discover, explain and in our case to strengthen or create “the vision of the world” of a sociocultural linguistic group. With the strategy of introducing terminology work at the University of Pinar del Rio, following a transdisciplinary approach, we try to influence in the educative process and strengthen values through the content. The graduate student will be better capable to contribute in his specialization in the different levels of the forestry profession when having internalized the environmental, economical and social dimensions of the *SFD. Sustainable forest development* as a paradigm to reach sustainability is the perfect conceptual world.

#### References

- Alpizar, R. 1997. ¿Cómo hacer un diccionario científico técnico? Editorial Memphis, Argentina
- Cabré, M.T. 1993. La Terminología, Metodología, Aplicaciones. Editorial Empuries, Barcelona. p. 529
- FAO. 1997. Boletín Informativo de los Programas Forestales. Año 1, No. 2. Santiago de Chile
- Faulstich, Enilde. 1993. Taller regional de terminología aplicada (Metodología para proyecto terminográfico en banco de datos). Universidade Federal de Rio Grande Do Sul, Instituto de Letras, Cuadernos Do I.L. No 10
- Faulstich, E. 1999. A Função Social da Terminologia. In: Faulstich, Enilde: I Seminario de Filosofia e Língua Portuguesa. Sao Paulo. Humanitas. pp. 167-183.
- Hernández, E. 2000. El Modelo del Profesional Forestal en Función del Manejo Forestal Sostenible. UPR. (In press)
- ITTO. 1998. Criteria and Indicators for Sustainable Management of Natural Tropical Forest. In: Higman, S.; Bass, S.; Judd, N.; Mayers, J.; Nussbaum, R. The Sustainable Forestry Handbook. Earthscan, London, 1999.
- IUFRO. 1997. International Bibliography of Dictionaries, Glossaries and Terminological Publications in Forestry and Related Sciences. IUFRO Occasional Paper No. 8
- Sager, J.C. 1990. A Practical Course in Terminology Processing. John Benjamins Publications Company, Amsterdam
- REALITER (Red Panlatina de Terminología). 1995. Principios metodológicos del trabajo terminológico. Barcelona
- WCFS (World Commission on Forest and Sustainable Development). 1999. Ministerial Conference of Helsinki. In: Summary Report of the WCFS.

# Coming to Terms with Politicians and Definitions

H. Gyde Lund

## *Abstract*

*Recently there has been a large number of international agreements, conventions and protocols dealing with forest and forestry – especially since the United Nations Conference on Environment and Development (UNCED) in 1992. Politicians and high-level government officials, eager to do the right thing regarding the environment endorsed documents such as the Forestry Principles, the United Nations Framework Convention on Climate Change (UNFCCC) including the recent Kyoto Protocol, the Convention on Biological Diversity (COB), and the Convention on Desertification. Successful accomplishment of these agreements requires a common understanding globally and implementation nationally. However, these agreements often contain terms that are not clearly defined or accepted at all levels. It could be that the endorsers either believed that they were commonly understood or they purposefully left the definitions and interpretations up to the implementing bodies.*

*To understand the magnitude of definitions in use at the national and international levels, IUFRO 6.03.02, in 1998, undertook studies of some terms associated with the UNCED documents. The studies included a world-wide literature review and Internet survey for definitions of such terms as tree, forest, land cover, land use, deforestation, afforestation, reforestation, old growth and ancient forest, protected areas, and low forest cover, that appeared to be ambiguous in many of the agreements. For example, the term “forest”, key for the implementation of the Kyoto Protocol, may be defined as an administrative unit by one country, a type of land cover by another or a type of land use by yet another. With such diversity in definitions at the national level, it would be very difficult to develop any meaningful statistics at the global level.*

*This paper summarizes the findings and definitions compiled for the above mentioned activities. I present some of the extremes as to how the key words may be interpreted or misinterpreted nationally and globally and make some suggestions for resolution. The paper concludes with recommendations on how scientists and resource managers may avoid confusion and global ambiguity in the future by working with the politicians and policy-makers now.*

**Keywords:** Forest terminology, international processes, definitions, forest, old-growth



## 1. Introduction

Since the United Nations Conference on Environment and Development (UNCED) in 1992, there has been an increased interest in our forests. Several global initiatives have been launched and agreed upon to protect and expand the forest resource base to meet future needs of a growing population. These include:

- *The Rio Declaration (RD)* - The *Rio Declaration on Environment and Development* is a political document or proclamation that outlines lifestyles that ensure the planet's integrity as habitat for humankind and all living creatures.
- *Agenda 21 (A21)* - *The Programme of Action for Sustainable Development for Now into the Twenty-first Century* is a longer, negotiated text of action steps, four sections, and 40 chapters. Each chapter deals with a different substantive area, identifying desirable outcomes, and the steps necessary to achieve them (Anonymous 1992, 1993).
- *Forestry Principles (FP)* - The objective of the Non-Locally Binding Authoritative Statement of Principles For a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests is for Governments to contribute to the management, conservation, and sustainable development of forests and to provide for their multiple and complementary functions and uses (Anonymous 1992, 1993). The main emphasis of the Principles is for Governments to manage *forest land* on a sustainable basis to meet the social, economic, ecological, cultural and spiritual needs of present and future generations including forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks and reservoirs, and for other forest products.
- *Convention on Biological Diversity Conservation (CBD)* - The United Nations Convention on Biological Diversity is developed to ensure effective mechanisms to halt the destruction of biological species, habitats, and ecosystems. The goals of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the use of genetic resources, including appropriate access to genetic resources and appropriate transfer of relevant technologies, considering all rights over those resources and technologies, and appropriate funding.
- *Framework Convention on Climate Change (FCCC)* - The United Nations Framework Convention on Climate Change has the goal to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Governments should achieve such a level within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. The tracking of changes in vegetation cover is implied in this Convention. Vegetation cover, such forests, serve as sinks of carbon dioxide and serve as reservoirs in the form of biomass. Loss of vegetation cover, thus, increases the level of greenhouse gases in the atmosphere. Maintaining or increasing vegetation cover, especially the forest cover, can help mitigate climate change, both by preventing emissions,

and by sequestering the carbon content of standing vegetation crops (forest) (Gupta 1994).

- *Convention on Desertification (COD)* - The objective of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification Particularly in Africa is to combat desertification and mitigate the effects of drought through effective action at all levels.

The people who sign these documents are usually highly-placed officials or politicians. They may or may not have the technical background to fully understand the nuances of what they have agreed to do. They are often more concerned about the political ramifications rather than the technical ones. In their zeal to reach consensus, however, those signing the agreements may use terms whose meanings vary widely from country to country. Thus there may be little common understanding of what the documents actually mean at the global level. The following are some examples.

## 2. What is a Forest?

All of the above conventions call for some data on forests. However one may label lands as *forest* based upon administrative responsibilities, land cover, land use or some other factors. In a search I found over 400 published or official definitions of *forest* or *forest land*. Table 1 lists some of the characteristics of *forest land* as defined nationally and internationally.

Table 1 – National criteria used for defining forestland. Note: some data are extracted from the UN/ECE-FAO Forest Resource Assessment 2000 in addition to the above definitions. Blanks mean no threshold values were stipulated or found. Definitions for countries not listed are unknown (Lund 2000a).						
Countries	Definition type	Minimum threshold values				Notes
		Area (ha)	Crown Cover (%)	Tree Height (m)	Strip width (m)	
Afghanistan	Cover		20			
Albania	Cover	0.1	20			
Antigua & Barbuda	None					
Argentina	Use					
Armenia	Cover					
Aruba	Cover					
Australia	Use		30	5		
Austria	Use	0.1	30		10	
Bangladesh	Unknown					"Tree" includes palms, bamboos, stumps, brush-wood and canes
Barbados	None					
Belgium Flemish Region	Use	0.05 ≥	20		25	
Belgium Walloon Region	Use	0.01 ≥			9	

Table 1 – National criteria used for defining forestland. Note: some data are extracted from the UN/ECE-FAO Forest Resource Assessment 2000 in addition to the above definitions. Blanks mean no threshold values were stipulated or found. Definitions for countries not listed are unknown (Lund 2000a).

Countries	Definition type	Minimum threshold values				Notes
		Area (ha)	Crown Cover (%)	Tree Height (m)	Strip width (m)	
Belize	Unknown					"Tree" includes shrubs, bushes, palms, bamboos, creepers, canes, stumps, seedlings, saplings and coppice shoots
Benin	Cover					
Bhutan	Admin.					
Bolivia	Use					
Botswana	Admin.					"Tree" includes palms, shrubs, bushes, climbers, seedlings, saplings and regrowth of all ages and of all kinds, and any part thereof.
Brazil	None					Reportedly has no national or legal definition
Burkina Faso	Use					
Burundi	Use					
Cambodia	Cover		30	5		
Cameroon	Cover					
Canada	Use					
Cape Verde	Use					
Chile	Cover	5	10			Excludes degraded areas, and areas used for agriculture, fruit trees and intense grazing
China	Cover		20			
Colombia	None					Reportedly has no national or legal definition
Comoros	Use					
Congo, Republic of	Cover					
Costa Rica	Cover	2	70			Includes lands with more than 70 trees per ha and with dbh 15 cm.
Côte d'Ivoire	Cover					
Croatia	Cover					
Cuba	Use			5		
Cyprus	Use					
Czech Republic	Use	0.01			20	
Denmark	Use	0.5	30-50	6	20-30	
Dominica	Admin.					
Eritrea	Cover		10			
Estonia	Use	0.5	30	1.3		
Ethiopia	Cover		68	7		
Fiji	Admin.					
Finland	Potential	0.25				Excludes land capable of producing less than 1m <sup>3</sup> and ha stemwood
France	Cover	0.25	10		15	
Gambia	Cover		10	3		
Georgia	Cover					
Germany	Use	0.1	50		10	

Table 1 – National criteria used for defining forestland. Note: some data are extracted from the UN/ECE-FAO Forest Resource Assessment 2000 in addition to the above definitions. Blanks mean no threshold values were stipulated or found. Definitions for countries not listed are unknown (Lund 2000a).

Countries	Definition type	Minimum threshold values				Notes
		Area (ha)	Crown Cover (%)	Tree Height (m)	Strip width (m)	
Ghana	Cover					
Greece	Use	0.5	10		30	
Grenada	Use					"Tree" includes palms, bamboos, stumps, brushwood and canes.
Guatemala	Cover	2				
Guyana	Admin.					
Haiti	Admin.					
Honduras	Cover					
Hungary	Use	0.15				
Iceland	Use	0.25				
India	Cover		10			
Indonesia	Use					
Iran	Cover		1			
Ireland	Use	0.5	20		40	Excludes areas producing less than 4 m <sup>3</sup> /ha/yr
Isle of Man	None					"Forest" usually interpreted as woodland. "Tree" includes shrubs.
Israel	Cover		10	4		
Italy	Use	0.2	20		20	
Jamaica	Cover	4	75	5		Excludes tree crops
Japan	Use	0.3	30	5		
Kenya	Cover		40	2		
Korea, Republic Of	Use					Excludes orchards
Kyrgyzstan	Use		20	2	25	
Laos	Admin.					
Latvia	Use					
Liechtenstein	Cover		20		25-50	
Lithuania	Cover		20		10	Includes trees with a minimum dbh 14 cm or greater.
Luxembourg	None					
Madagascar	Use					
Malawi	Cover		80			
Malaysia	Cover		10	5		
Mali	Use					
Mauritania	Cover					
Mauritius	Use					
Mexico	Use	0.15	10	3		
Montserrat	Admin.					
Morocco	Cover	3	30	7		
Mozambique	Cover		25	7		
Myanmar	Admin.					"Tree" includes root, stump, stem, branch, bush, creeper, bamboo, cane, orchid and seedling.

Table 1 – National criteria used for defining forestland. Note: some data are extracted from the UN/ECE-FAO Forest Resource Assessment 2000 in addition to the above definitions. Blanks mean no threshold values were stipulated or found. Definitions for countries not listed are unknown (Lund 2000a).

Countries	Definition type	Minimum threshold values				Notes
		Area (ha)	Crown Cover (%)	Tree Height (m)	Strip width (m)	
Namibia	Cover		20	5		
Nepal	Cover					
Netherlands	Use	0.5	20	6	30	
New Zealand	Use	5	20	6		"Tree" includes not only timber trees, but also all other kinds of trees, shrubs, and bushes, seedlings, saplings, cuttings, suckers, and shoots of every description
Niger	Use					
Northern Mariana Islands	Cover	0.01				
Norway	Potential	0.1				Includes land with an average potential production equal to or higher than 1 m <sup>3</sup> (including bark) per ha and year
Pakistan	Use					"Tree" includes palms, bamboos, stumps, brushwood and canes.
Panama	Cover		45			
Papua New Guinea	Cover	100	10	5		
Paraguay	Potential					
Peru	Cover					
Philippines	Topography				20	Generally excludes areas with slopes < 18%
Poland	Use	0.1				
Portugal	Use	0.2	10-15	1.5	15	
Puerto Rico	Admin.					
Romania	Use			7		
Russian Federation	Cover		30			
Saint Lucia	Use					
Seychelles	None					Reportedly has no national or legal definition but uses international conventions. Which conventions were not specified.
Sierra Leone	Admin.					"Tree" includes any woody vegetation.
Slovakia	Use					
Slovenia	Cover					Excludes individual trees, riverine and windbelt trees, plantations, etc.
Solomon Islands	Unknown					Excludes agricultural lands. Tree includes any root, stump, stem, branch, brushwood, ung(?) tree or sapling.
Somalia	Cover		20	5		
South Africa	Cover		75	3		
Spain	Use	0.2	5-10		20	Excludes lands capable of producing less than 1 m <sup>3</sup> /ha/yr

Sudan	Cover		40	10		
Swaziland	Unknown					"Tree" means the whole or any part of any tree as ordinarily understood or of shrub, bush, seedling, transplant, sapling, reshoot, underbrush or regrowth.
Sweden	Potential	0.25	0			Excludes land capable of producing less than 1m <sup>3</sup> /ha/yr
Switzerland	Cover		20-100	3	25-50	
Taiwan (R.O.C.)	Use		0.5	10	50	Trees include bamboo. Min. d.b.h. for tree is 10 cm
Tajikistan	Cover					
Tanzania	Cover		60	8		"Tree" includes palms, bamboos, canes, shrubs, bushes, plants, poles, climbers, seedlings, saplings and regrowth thereof, all ages and all kinds and part.
Thailand	Use					
Togo	Use					
Tunisia	Cover					
Turkey	Use	3	10	8		
Uganda	Admin.					"Tree" includes palms, bamboo, canes shrubs bushes, climbers, seedlings, and re-growth of all ages and of all kinds, and any part thereof.
Ukraine	Cover		60			
United Kingdom	Use	0.25 1	20		20-50	
United States	Use	0.4	10	4	36	
Uruguay	Cover	0.25				
Vanuatu	Cover			10		Includes crowns touching or overlapping
Venezuela	Use					
Viet Nam	Use		30			Includes bamboo
Yemen	Cover	3	10	5		
Zambia	Admin.					
Zimbabwe	Cover		80	15		"Tree" includes bushes, climbers, coppice, palms, reshoots, saplings, seedlings and shrubs of all ages and of all kinds and any part thereof.
International Criteria						
SADC1	Cover		70	5		Excludes planted forests
United Nations2 - FRA 2000	Use	0.5	10	5	20	Excludes land used primarily for agricultural purposes
United Nations – Land Use	Use					Excludes woodland or forest used only for recreation purposes. Stands of permanent crops such as rubber, fruit trees, nut trees, are classed as permanent crops under agricultural lands
United Nations – LCCS	Cover			3		
UNESCO	Cover		40	5		

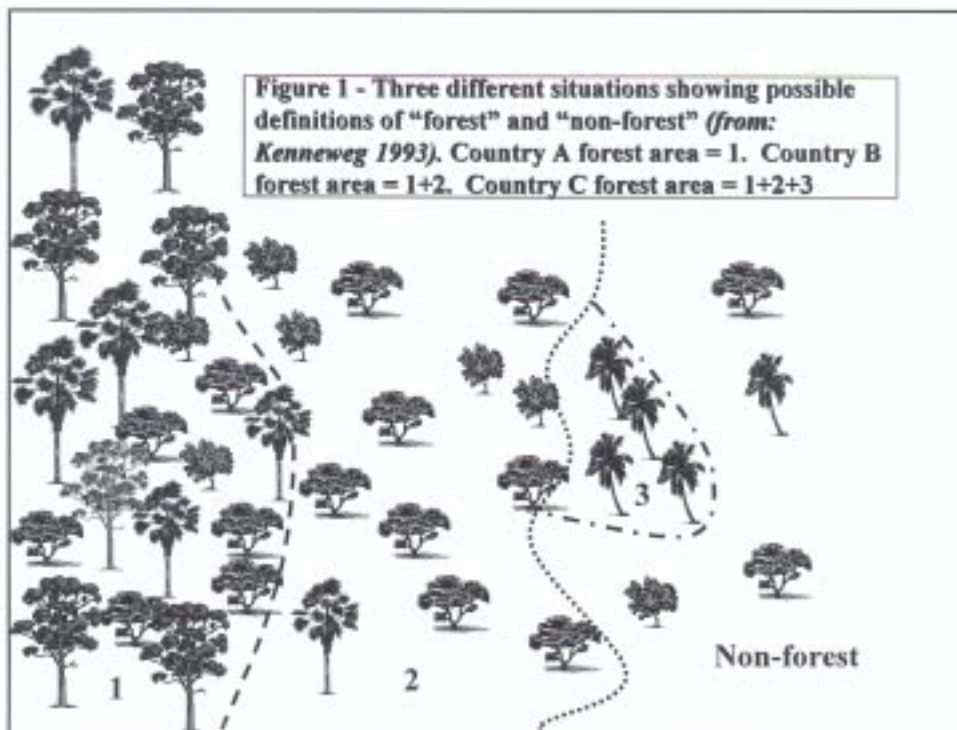
<sup>1</sup> Southern African Development Community

<sup>2</sup> Where FRA = UN-ECE/FAO's Global Forest Resource Assessment 2000, LCCS = Land Cover Classification System.

As can be seen from the above, what individual nations considered *forest land* varied considerably. Some classed lands as forest based upon an administrative or gazetted unit, as a land cover, as a land use, or a combination. Land use is the most difficult to determine. Table 2 shows some of the uses that may be made of trees in various settings. Which are forestry uses and which are not?

<b>Table 2 – Goods and services trees play in various settings</b>			
<b>Goods and services provided</b>	<b>Wild setting</b>	<b>Urban setting</b>	<b>Plantation setting</b>
Carbon sequestration	Yes	Yes	Yes
Wood and fuel	Yes	Yes	Yes
Non-wood forest products	Yes	Somewhat	Somewhat
Wildlife habitat	Yes	Yes	Somewhat
Biological diversity	Yes	To some extent	Very little
Soil stabilization	Yes	Yes	Yes
Watershed protection	Yes	Yes	Yes
Recreation	Yes	Yes	Somewhat
Air and noise filtration	Yes	Yes	Yes

Thresholds vary from 0.01ha to 100 ha for minimum area, 1 m to 15 m for tree height, 1% to 80% crown cover, and 10m – 50m for strip widths. Figure 1 illustrates how different areas may be classed as “forest” based upon different thresholds. Country A may include only tall trees. Country B may include shorter trees and less crown cover. Country C may include smaller minimum areas and narrow strips.



Given the variability in the national definitions and the thresholds in use, it is clear that those national representatives who signed the various UNCED documents may not have had a common vision of what is a forest.

### 3. In Action

The United Nations Framework Convention on Climate Change (UNFCCC) was signed at UNCED in 1992 by more than 150 nations and thereafter ratified by a similar number (UNFCCC 1998). The UNFCCC has put in place a regular meeting of its parties, the so-called “Conference of the Parties” (COP). The COP has two sub-bodies: Subsidiary Body for Implementation (SBI), which is more responsible for practical issues, and the Subsidiary Body for Scientific and Technological Advice (SBSTA), which is more responsible for the scientific issues. The Intergovernmental Panel on Climate Change (IPCC) is responsible for providing an overview of the scientific findings/literature, and its reports are peer-reviewed. The IPCC reports its findings to SBSTA, but SBSTA can also request information from the IPCC.

The Third Conference of the Parties to the UNFCCC (COP3), held 1-11 December 1997 in Kyoto, Japan, called for, among other things, the reporting on emissions and sinks resulting from *direct human-induced land use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990* following recommendations from the IPCC. Afforestation, deforestation and reforestation (ARD) are actions that may increase or decrease carbon storage depending on how they are interpreted. To interpret the ARD terms, one has to know if the COP really meant “land use” or did they assume it to mean “land cover.” A basic question for any international agreement is “how far do nations have to go to follow the intent of the agreement and what latitudes do they have in interpretations?” The FCCC Secretariat called for clarification of the use of the ARD terms as they are used in various parts of the world (UNFCCC 1998).

In response, the International Union of Forestry Research Organizations’ (IUFRO) Working Unit 6.03.02 formed an electronic discussion group on ARD. The purpose of the group was to provide a platform to discuss these terms key to forestry’s part in Climate Change and the Kyoto protocol. The goal was to make people aware of terminology differences and, wherever relevant, point out the conceptual convergence behind the differences. I used literature reviews, searches of the Web for glossaries and dictionaries, published studies such as Prüller (1996) and individual contributions to develop the lists of definitions. As with the national definitions of *forest* and *forest land*, I found that ARD terms varied from those in common everyday usage to official national definitions to those used by the United Nations for global assessments (Table 3).

<b>Table 3 – Listing of national ARD definitions by type and country. Where there is more than one entry per row, there was more than one definition found for that country (Lund 2000a).</b>							
Country	Afforestation is defined as		Reforestation is defined as		Deforestation is defined as		
	Creation of new land cover	Creation of new land use	Restoration of land cover	Restoration of land cover and use	Removal of land cover	Change in land use	Removal of land cover and change in land use
Australia	Yes						
Austria		Yes	Yes				Yes
Bolivia	Yes			Yes	Yes		
Brazil			Yes				
Canada		Yes	Yes		Yes		Yes
Chile			Yes				



Colombia			Yes				
Cyprus	Yes		Yes				Yes
Denmark		Yes	Yes				
France	Yes				Yes		
Ghana	Yes				Yes		
Hungary	Yes						
India	Yes			Yes			Yes
Italy		Yes	Yes			Yes	
Kyrgyzstan	Yes		Yes				
Latvia	Yes			Yes			
Lithuania	Yes		Yes				Yes
Malaysia			Yes			Yes	
Morocco	Yes		Yes		Yes		
Nepal					Yes		
New Zealand	Yes						
Northern Mariana Is.	Yes		Yes		Yes		
Pakistan	Yes		Yes				Yes
Papua New Guinea	Yes						Yes
Romania	Yes		Yes		Yes		
Russia			Yes				
Saint Lucia	Yes		Yes		Yes		
Taiwan (R.O.C.)	Yes		Yes		Yes		
Thailand				Yes	Yes		
Uganda				Yes			
Ukraine	Yes			Yes			
United Kingdom			Yes				
Yemen	Yes		Yes		Yes		
USA		Yes	Yes				
United Nations	Yes		Yes		Yes	Yes	

Table 4 shows generic definitions of ARD based upon various interpretations of *forest* and *forest land*.

<b>Table 4 - Definitions of deforestation, reforestation, and afforestation by interpretation of “Forest” or “Forest land”</b>				
<b>Change action</b>	<b>Forest or forest land interpreted as:</b>			
	<b>An administrative unit</b>	<b>A land cover</b>	<b>A land use</b>	<b>A combination land cover and use</b>
<b>Deforestation</b> Generic definition: The act or process of changing <i>forest land</i> to <i>non-forest land</i> .	The act of changing the proclamation of the land to a category other than “Forest”	The act of reducing the tree cover to below the threshold value <sup>1</sup> for “Forest.”	The act changing the employment of the land to some other use other than forestry purposes <sup>2</sup> .	The act of removing tree cover to below the threshold value for “forest cover” and changing the employment of the land to some use other than forestry.

<sup>3</sup> Thresholds may include a minimum percent of tree crown cover, tree height, tree diameter, yield per ha, or minimum area, or a combination. The thresholds used may vary from country to country (see table 2).

<sup>4</sup> Forestry uses or purposes may include timber production, recreation, biodiversity preservation, environment and watershed protection, etc. See table 2. What is considered a forestry use may vary from country to country.

<b>Reforestation</b> Generic definition: The act or process of changing previously (historically) deforested lands back to <i>forest land</i> .	The act of re-proclaiming land previously listed as "Forest" as "Forest."	The act of re-establishing tree cover where it once existed to meet or exceed the threshold value for "Forest."	The act of reestablishing use back to forestry purposes.	The act of re-establishing tree cover where it once existed to meet or exceed the threshold value for "forest cover" and where the land use has been or is currently used for forestry purposes.
<b>Afforestation</b> Generic definition: The act or process of creating <i>forest land</i> where it previously (historically) did not exist	The act of proclaiming land as "Forest" where it was not previously (historically) so designated.	The act of establishing tree cover, where it previously (historically) has not existed, to meet or exceed the threshold value for "Forest."	The act of establishing forest use where it previously (historically) has not existed.	The act of establishing tree cover, where it previously (historically) has not existed, to meet or exceed the threshold value for "forest cover," where the land will be used for forestry purposes, and where it has not been previously (historically) been used for such employment.

The decision on which terms and definitions to ultimately use to meet the needs of the Kyoto Protocol must be considered in light with the end point in mind. Intuitively one would consider changes in land cover as being the most meaningful for Kyoto. But, since the COP use referred to land use instead of land cover, one cannot be totally certain. Nations need a clear understanding of what it is in which the COP is interested and how the COP wishes to use the information. It may turn out that none of the terms listed above are what is needed.

#### 4. In the News – The Descriptors

In the past twenty years there has been an increased interest in the management and fate of our remaining *forest lands* especially as the land relates to the Convention on Biological Diversity. Cries to preserve the last remaining ancient, virgin, pristine, old-growth may be heard in all parts of the world. Conservation groups rightfully want to protect ancient forests and exert political pressure to do so. But at the same time key terms such as *ancient* and *pristine* forests have not been defined adequately so those lands can be clearly identified in the field. If one cannot identify, how does one know if the right areas are being protected or not. Unclear definitions has pitted industrial and environmental groups to work against each other instead of supporting one another.

The International Institute for Applied Systems Analysis (IIASA) asked that I do a search much as I did for the ARD terms to see what variation occurs in the interpretation of *pristine* and *natural* forests. In 1998, I undertook a survey of various descriptors of forested land as they apply to origin, development stage or degree of human influence. Sources include searches on the Internet, dictionary and literature reviews such as Helms (1998), and individual responses to a broad emailing to various forestry lists. Table 5 lists some of the terms I found. Unlike ARD, these descriptors are usually always classifiers of existing forest cover.

Table 5 –Descriptors of forest cover (Lund 2000b)				
Forest descriptors <sup>1 5</sup>	Origin	Development stage or condition		Human influence
		Age	Ecological	
<i>Anthropogenic, Man-made</i> (3)	Yes			Yes
<i>Ancient, Antique, Primeval</i> (7)		Yes		
<i>Climax</i> (8)		Yes	Yes	
<i>Frontier</i> (1)				Yes
<i>Indigenous</i> (1)	Yes			
<i>Late Succession</i> (1)		Yes	Yes	
<i>Mature</i> (1)		Yes		
<i>Native</i> (9)	Yes			
<i>Natural</i> (12)	Yes			Yes
<i>Old, Old-growth</i> (54)		Yes		
<i>Original</i> (1)	Yes			
<i>Plantation</i> (27)	Yes			Yes
<i>Primary</i> (14)		Yes	Yes	
<i>Pristine</i> (2)		Yes		Yes
<i>Re-growth</i> (1)		Yes		
<i>Secondary</i> (8)		Yes	Yes	
<i>Semi-natural</i> (3)	Yes			Yes
<i>Virgin</i> (18)				Yes

<sup>5</sup> Numbers in parentheses indicate the number of definitions I found for that particular term or set of terms.

**Origin Descriptors** - Adjectives used to describe the origin or source of the forest include *indigenous* or *native* and *natural*. I found a total of 56 definitions in this category.

**Indigenous or Native Forest** - Some of the definitions exclude plantations, other do not. While source of forests should be clear, the timeframe and area involved need to be considered.

Very few organisms develop in place - they migrate from another area to another. Tree ranges expand with the assistance of wind, water and animals (including humans). Ranges decrease due to climate changes, disasters, and animal intervention.

Many tree species originated in places other than where they are found today. The vast boreal forests of the Northern Hemisphere are an example. At one time this land was covered with glaciers. There were no native or indigenous trees to be found. As the glaciers receded, the trees invaded spread by wind, water, and animals (including human). A time factor has to be included as to when invaders or transplants become native.

In addition to a time factor, location must also be specified. For example, ponderosa pine (*Pinus ponderosa*) is native to the United States, but it is not found in all 50 states. A generic definition for *native* or *indigenous forests* may be: *A forest where the tree species have been present in a specified location for at least X number of years.*

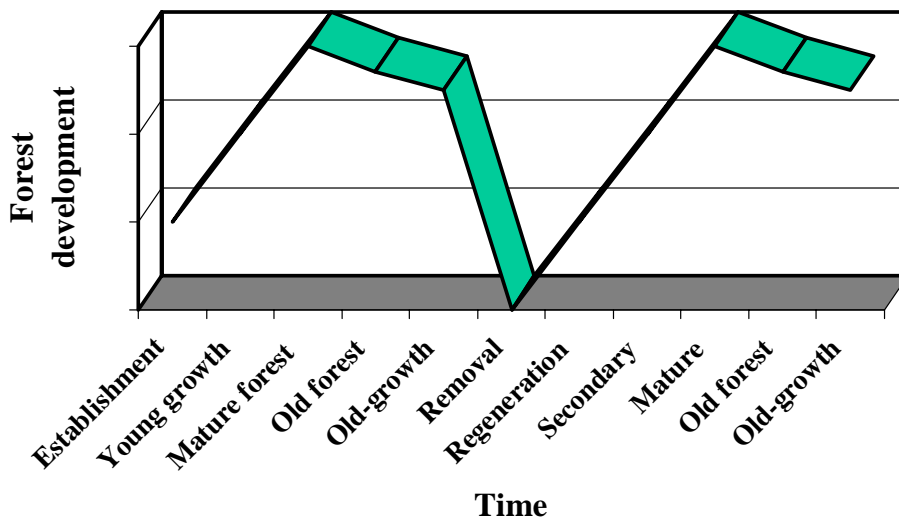
**Natural Forest** -The definitions vary from meaning a forest that has been free of human influence to one that is merely composed of indigenous species. The definitions also vary as to how the forest is established (planting or natural regeneration). A generic definition may be: *A forest that originates by means other than purposeful sowing or planting by human beings. Forests that originate due to suckering, seedfall, and seed and plant dispersion by wind, water and animals (including humans).*

**Development Stage Descriptors** - In order of reverse development, descriptors include: *ancient, antique and primeval forests; original forests; primary forests; late succession forests; old and old-growth forests; climax forests; mature forest, and secondary or regrowth forests*. I found 96 definitions for these terms.

Many definitions in this category are esoteric and, from a resource inventory stand point, difficult to classify in the field. Once classified, the task is to define how the lands should be managed. That itself can be confusing and very emotionally charged.

For example, there are pressures from both environment and development to avoid forest degradation. In its most liberal interpretation, a *degraded forest* may be defined as *the temporary or permanent reduction in the density, structure, species composition or productivity of vegetation cover* (Grainger 1996). In a sense then, old-growth forests are degraded forests. Should management encourage or discourage old-growth forests?

The change in forest stages is cyclic so how a forest is classified will change over time (fig. 2). Development continues along a line until something changes the direction or speed. Those things that can change succession include: climate, disasters, and human influences.



**Figure 2** - Changes in terms used to describe a forest as development progresses.

**Original Forest** - These definitions vary vastly. One definition states that original forests are what was here 8000 years ago. Other definitions, if taken literally, could be an area recently afforested if there is little or no evidence of human activity.

**Primary Forest** - All definitions imply that human influence is at a minimum. Some definitions imply the forests are at maturity. Others imply a primary forest is the first into the area. According to recent discoveries (Chang 1999), *Archaeopteris* was the first tree. When it first appeared some 370 million years ago, it quickly became the dominant tree all over the Earth. Therefore **original or primary forests**, if taken literally, would be the *Archaeopteris* forests of some 370 million years ago. A generic definition of *original or primary forests* would be: *The first forests into an area.*

**Old and Old Growth Forest** – The definitions vary widely. Some exclude human influence, others do not. A generic definition of **old and Old-growth forest** would be: *A mature forest that is in decline or a degrading mature forest*

Other generic definitions include:

**Ancient, Antique, and Primeval forests** - *forests that have been in place for over  $\underline{X}$  number of years.*

**Climax forest** - *a plant community dominated by trees representing the culminating stage of natural succession for that specific locality and environment assuming no introduction or evolution of new species, changes in climate and weather, changes in soil chemistry and soil productivity, or disturbances or interventions.*

**Mature forest** - *a forest that has completed natural growth and development.*

**Secondary forests** - *this is what most of our forests are today if one assumes that Archaeopteris was the first forest.*

**Human Influence Descriptors** - Working from least affected to most affected forest, descriptors include: **pristine, virgin and untouched forests and artificial, man-made and plantation forests**. I found some 66 different definitions for these terms. See also **Natural forests** above.

**Pristine, Virgin, Untouched Forest** -The forests do not have to be old. A recently afforested area could be considered **virgin** if humans have not intervened after establishment.

The word **human** is defined as *a bipedal primate mammal (Homo sapiens)* (Merriam-Webster 1999). How does one divorce humans from nature? If humans are considered a product of nature, then shouldn't our actions also be considered natural?

Some people will argue that all forest have been impacted by humans in some way. The term **managed** means *b : to treat with care : HUSBAND <managed his resources carefully> c : to exercise executive, administrative, and supervisory direction of <manage a business> <manage a bond issue. 2 : to achieve one's purpose* (Merriam-Webster 1999). A decision to protect or not do something with a stand of trees is a management decision. Thus, according to the dictionary definition of **managed**, all forests are managed to one degree or another.

A generic definition for **Pristine, Virgin, Untouched Forests** would be: *Any forest, regardless of age, that has not had any human-induced treatment (pruning, harvesting, thinning, spraying, fertilization, etc.) If protection is to be considered a treatment or intervention - the degree of acceptable protection is to be defined.*

**Semi-Natural Forest** - Two definitions were found. Both definitions exclude plantations and include only native trees and shrubs. If one assumes that all

forests have been influenced by humans and eventually all species will be considered native at some point in time, a generic definition of *semi-natural forests* may be *all forested areas excluding plantations*.

**Artificial, Man-made and Plantation Forests** - The primary difference between among the definitions is some specify the trees will be used as a crop whereas other definitions do not. Some people would not classify a plantation as a forest. A generic definition would be: *Forests that arise due to planting or sowing in the process of afforestation or reforestation*.

## 5. How Low Can You Go?

The Intergovernmental Forum on Forests (IFF) identified countries of Low Forest Cover (LFC) as being of special concern especially when considering the Convention on Desertification. The IFF recognized that there are both developed and developing countries with low forest cover. Low forest cover can arise as a result of natural ecological conditions, as well as of human activities and the situation is constantly changing (IPF 1996). Some countries are actively expanding their forest cover, while others are approaching qualification for entry into the low forest category.

The restricted area of forests in countries with low forest cover results in reduced capacity for the production of timber and for the provision of goods and services, including the protection of watersheds, the supply of fuelwood, the maintenance of biological diversity and endemic species, and recreation and amenity. Moreover, many of the forest types in those countries are distinctive or even rare, and require national protective measures and international support, while the proportion included in nationally designated protected areas is often below average.

Unfortunately, LFC was not defined. The International Union of Forest Research Organizations (IUFRO) entered into a Memorandum of Understanding signed with the United Nations Environment Programme (UNEP) for the development of a workable and precise definition of *low forest cover* in agreement with the Food and Agriculture Organization of the United Nations (FAO).

The IUFRO Secretariat asked Research Group 4.02 “Forest Resource Inventory and Monitoring” to take on the job and prepare a report entitled “Countries with Low Forest Cover.” The document should contain a workable and precise definition of the term *low forest cover* applicable to all countries and suited for use in the forest resources assessment in the year 2000. The report should list countries with low forest cover, based on the definition, option/ways for improving the productivity, conservation and monitoring of countries with low forest cover, taking into account the social and cultural dimensions.

IUFRO’s SilvaVoc project (IUFRO 1999) and Working Party 6.03.02 “Trends in Forest Terminology” provided assistance by compiling information on existing definitions, and by setting up a short-term electronic discussion to provide additional “food for thought.” The input and discussions may be viewed at <http://home.att.net/~gklund/LFCpaper.html>.

**An Analysis Of Possible Definitions** - Taken literally, “Low Forest Cover” could mean areas having open forests *versus* closed forests, coppice *versus* high forests, short trees *versus* tall trees, etc. However, based upon our discussions, our discussion group found four possible bases for definitions: the ratio of forest and other woodlands to total land area, the ratio of forest cover to total land area, the ratio of current forest area per capita, the ratio of current forest area to historic area as the most popular. Each requires different information and presents a different picture (figures 3-6).

Figure 3 - World countries classed by the percent of Forest and other woodlands (FOWL) to total land area. The lighter the shade the lower the percent. Data source: UNEP/IUFRO 1999.

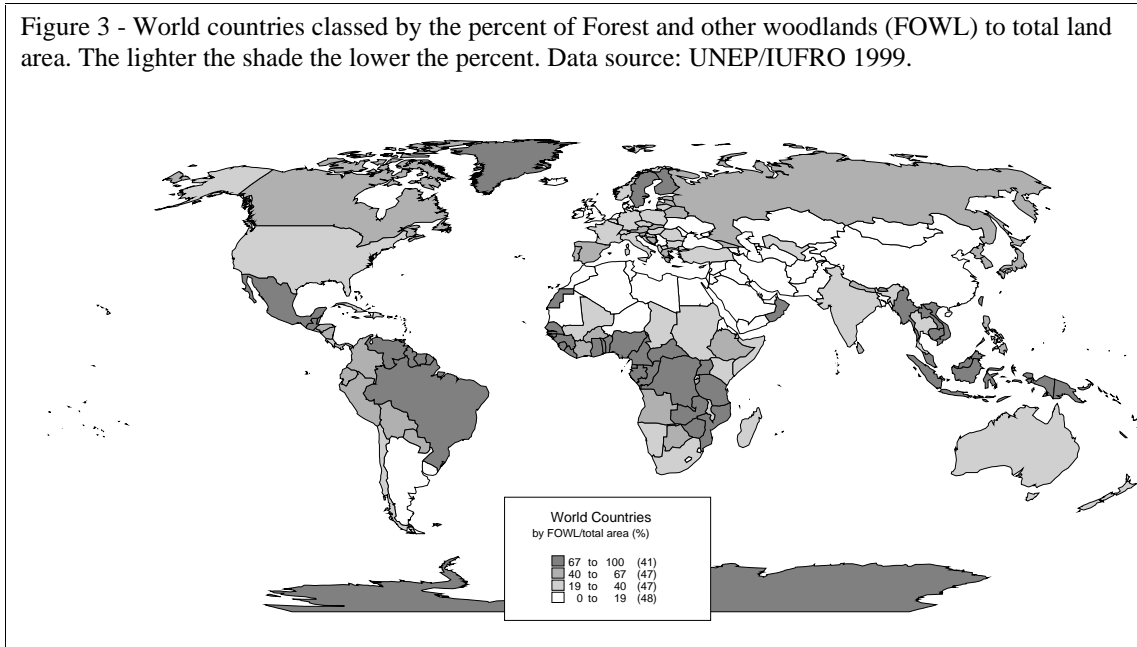


Figure 4 - World countries classed by *forest land* to total land area. The lighter the shade, the lower the percentage. Data source: UNEP/IUFRO 1999.

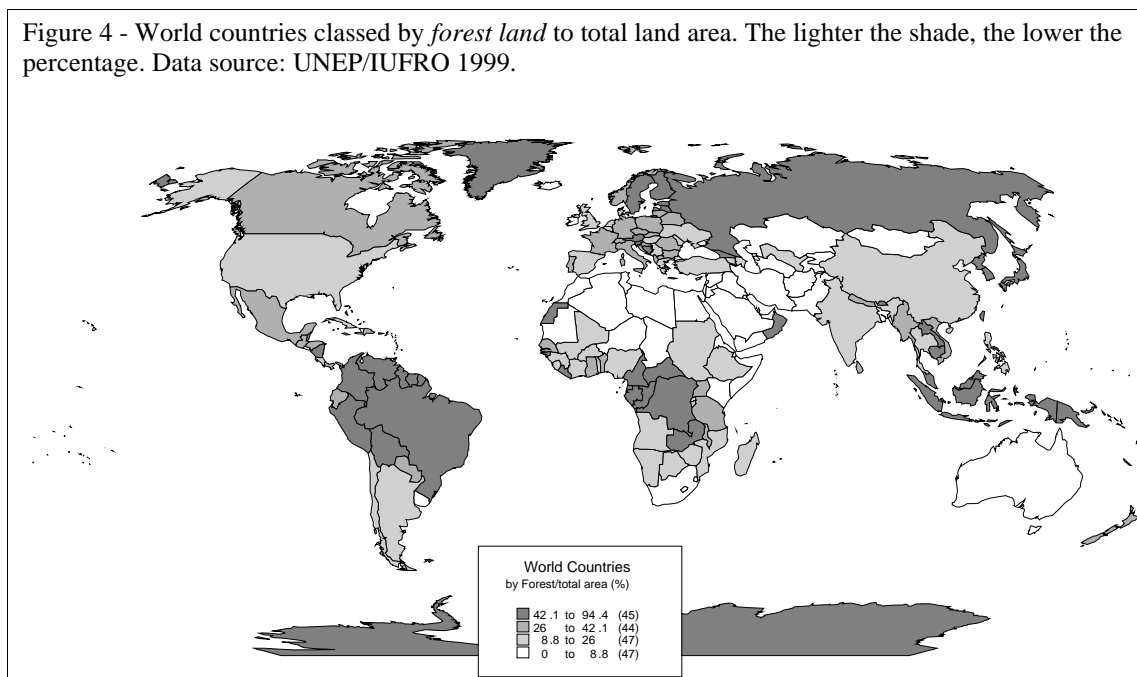


Figure 5 - Forest and other wooded land (FOWL) per capita. The lighter the shade, the less forest and other wooded land there is per person. Data source: UNEP/IUFRO 1999.

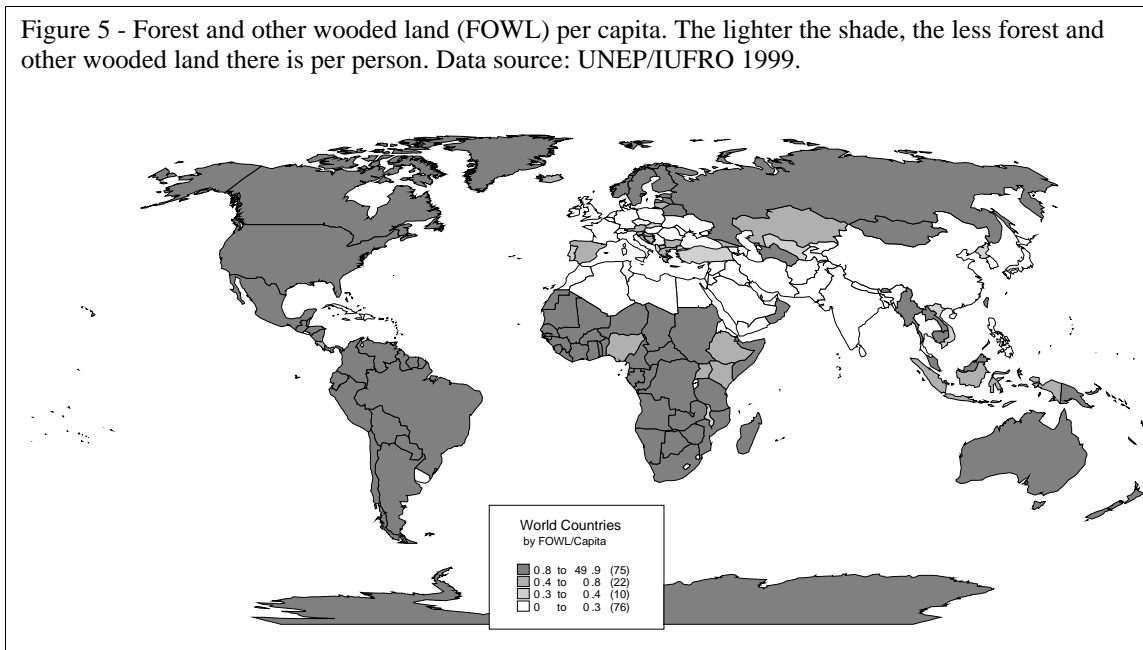
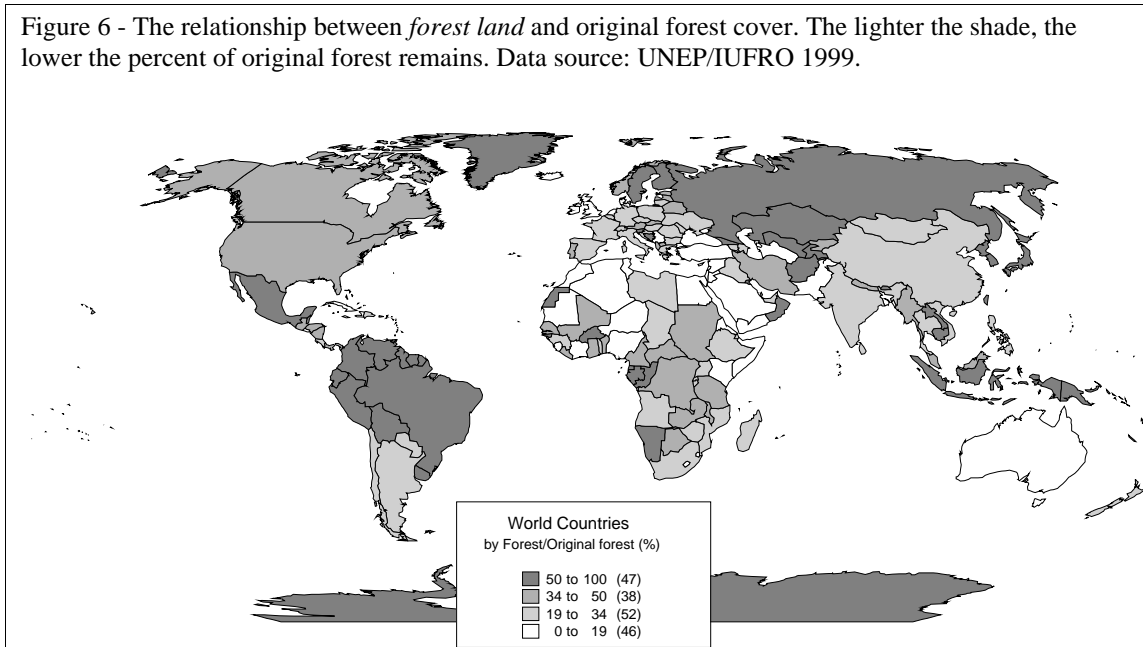


Figure 6 - The relationship between *forest land* and original forest cover. The lighter the shade, the lower the percent of original forest remains. Data source: UNEP/IUFRO 1999.





As one will note from figures 3-6, the countries that may be considered as LFC vary from definition to definition although several Middle-east and Northern Africa countries are common in all options.

Basing a working definition of LFC on combinations of indicators is also attractive in that it possibly allows for a “richer” interpretation of the difficulties to emerge in the political discussion which are sure to follow. Using slightly higher thresholds to bring in a couple of “developed” countries may help the process. More work could obviously be done on this.

If forced to choose only one option, a population-based ratio is the most informative indicator for development agencies to use in making resource allocation determinations. The dominant historical relationship between people and forests has been that as the former advances the latter retreats. If, as the saying goes, the past is prologue, then population dynamics will remain a key factor—though certainly not the only factor—demanding consideration by all parties interested in achieving “sustainable” resource management.

## 6. Off and On

In addition to the ARD terms, pristine forests, and low forest cover, there has been growing interest in trees off forests (TOF). These resources are important for all agreements that arose from UNCED. According to the United Nations Economic Commission of Europe (UN/ECE 1999), TOF includes *trees on: arable land (trees in hedgerows and on boundaries); land under permanent crops (fruit and nut tree orchards, shelter trees and boundary trees); permanent meadows and pastures (trees in hedgerows and on boundaries, scattered trees, woodlots less than 0.5 hectares); other land (trees in city parks, streets, gardens, around buildings, trees in hedgerows and along roads, canals, railways, rivers and streams, small woodlots less than 0.5 hectares)*. Other definitions refer to trees off-forest as trees not found on *forest land*. Like the ARD terms, TOF interpretations vary by how one defines “forest” (table 6).

<b>If forest is defined as a:</b>	<b>Off-forest land would be:</b>	<b>TOF may:</b>	<b>Inventory considerations</b>
Administrative or gazetted unit	All lands outside the "forest" boundary.	Have much the same role as trees on forests.	The same data collected on <i>forest lands</i> may be required on the <i>off-forest lands</i> . Similar sampling techniques may be employed.
Land cover	All lands with trees below a given crown cover threshold	Be sparsely distributed - therefore less biomass per ha. There may also be less species diversity.	Trees would be few and far between. Large plots may be required.
Land use	Any lands not used for forestry purposes	May have the same density as forest trees, but may have less diversity.	Determining what are forestry purposes and what are not would be a challenge. However, if resolved, the TOF would not have to be inventoried for forestry purposes (biomass, species diversity, etc.) Which means less information may be needed.

## 7. Tip of an Iceberg – UNCED and its requirements

Global initiatives and cooperation are the driving forces toward the need for common definitions and understanding of forestry terms. As one can see from the above discussion, significant differences and interpretations of forest-related terms differ nationally and globally.

But “*forest*” and its related action terms and descriptors are but one set of indicators one must observe. Tables 7 and 8 list areas and indicators to be monitored according to the documents resulting from UNCED. Note there are more things than *forest* to monitor and each should have clear definitions. In addition, you will note that there are considerable commonalities in information requested among the agreements. This means that not only do definitions need to be developed for each agreement, but also they should be the same across the agreements. At this time, I do not know of any effort to coordinate the development of terminology across all of the resulting UNCED documents.

Area	Agenda 21	Forestry Principles	Convention on Biological Diversity Conservation	Convention on Climate Change	Convention on Desertification
Low-lying coastal			Yes	Yes	
Arid and semi-arid			Yes	Yes	Yes
Suitable for reforestation		Yes		Yes	
Suitable for afforestation	Yes	Yes		Yes	
Prone to natural disasters	Yes			Yes	
Liable to drought and desertification				Yes	Yes
High urban atmospheric pollution	Yes			Yes	
Fragile ecosystems			Yes	Yes	
Forested	Yes	Yes	Yes	Yes	

Indicator	Agenda 21	Forestry Principles	Convention on Biological Diversity Conservation	Convention on Climate Change	Convention on Desertification
Biomass	Yes			Yes	
Climate	Yes			Yes	
Ecosystems and Habitat		Yes	Yes		
Emission sources and removals		Yes		Yes	

**Table 8 - Indicators to be monitored according to documents from UNCED (Anonymous 1992, 1993).**

Indicator	Agenda 21	Forestry Principles	Convention on Biological Diversity Conservation	Convention on Climate Change	Convention on Desertification
Employment		Yes			
Energy	Yes				
Fodder		Yes			
Food	Yes	Yes			
Fuel		Yes			
Land cover	Yes				
Land degradation	Yes				Yes
Land productivity	Yes				
Land use	Yes			Yes	
Landscape diversity		Yes			
Medicine		Yes			
Minerals	Yes				
Plants and Animals	Yes	Yes	Yes	Yes	
Recreation		Yes			
Shelter		Yes			
Soils	Yes				
Water and Water Use	Yes	Yes			Yes
Wildlife	Yes	Yes			
Wood Stocks		Yes		Yes	

## 8. Conclusions and Recommendations

Successful implementation of international agreements, such as those arising from UNCED, requires a common understanding of what all terms mean. Definitions are one of the most difficult things to resolve especially when time is limited. Any discussion of meaning of terms is usually put off to end or not addressed whatsoever. The reason for not defining include:

- ◆ The authors believe that the terms are common knowledge.
- ◆ The authors are talking in generalities
- ◆ The authors do not want to be specific. Being ambiguous provides “wriggle-room” and escape routes.
- ◆ The subject is too complex for people to deal with - People agree in principle but do not have the time, expertise, or interest to flesh out the details. Consequently they leave that up to the scientific community which may take a completely different approach to the matter.
- ◆ The authors can reach no consensus on definitions so defer to a different body to resolve.

The problem with the last two bullets is that those assigned the task to develop definitions, may not have been privy to the discussions or rationale behind the need for the information or the special concerns. Therefore, they may not come up with definitions that meet the original intent. Those that are to define the terms need more information as to why the definition is needed and how it will be used.

A final thought – it is one thing to agree to a set of global definitions – but it is another to get nations to use them. Often the global definitions may conflict with historic or legal national definitions. In this situation, a country may have to produce two sets of statistics – one for global use and the other for national use.

How *forests* and its *descriptors* and *actions* are defined or not defined allows vested interests groups to access multi- and bi-lateral finances following their own agendas. This is the real politics in eagerness not to define a forest clearly. Poor definitions and the lack of initiative amongst donors to clarify and harmonize such fundamental terminology into current policy create for much of the crises in forest economy, livelihoods and biodiversity (Senanayake 1999).

The ability to effectively communicate depends on common understanding of terms and definitions. This is especially important when dealing with emotionally sensitive topics such as the state and management of forest resources as we enter into the 21<sup>st</sup> century.

As very minimum to simplify discussions in the future, I suggest the following:

- ◆ Use the term **Forest** (with a capital F) when referring to an administrative unit
- ◆ Use the term **forestland** when referring to land use. Be sure to define what uses are considered appropriate.
- ◆ Use **forested land** when referring to areas covered with trees.
- ◆ For any definition, include the thresholds including minimum area, strip width, canopy cover, and tree height. Specify if these are current conditions or when the stand is “at maturity.” These threshold values are especially important for working definitions - definitions that would allow people in the field to immediately identify what class of land they are in.
- ◆ In any serious discussion about the state of the forest and its various classifiers, authors should define how they are interpreting the key terms. This is especially true:
  - ◆ To have a common understanding (but not necessarily an agreement)
  - ◆ In the case of an inventory, to ensure people measure the right lands and attributes
  - ◆ When it is necessary to share statistics both laterally and upwardly.
  - ◆ Propose a “straw man” definition and let people react by stating what changes need to be made - not what is wrong with the definition.
  - ◆ Field test all definitions. Look at extremes or marginal situations. This is where inconsistencies will occur.
  - ◆ When one cannot define, consider a backdoor approach - identify what it is not.
  - ◆ Lastly, take advantage of the talents of established scientific groups like IUFRO’s Working Party 6.03.02 to resolve terms and definitions that may remain in question.

Without these kinds of actions, we will never come to terms with definitions and politicians.

### **Acknowledgements**

My thanks to the International Union of Forestry Research Organizations for providing me with the opportunity to attend this meeting. My thanks also to the numerous people that contributed background material in our search for definitions.

## References

- Anon. 1992. Earth Summit Agenda 21 The United Nations Programme of Action from Rio. New York, NY: United Nations. 294 p.
- Anon. 1993. Documents of the Earth Summit (Diskette). Rectors of the Costa Rican Public Universities.
- Chang, Kenneth. 1999. First tree of the forests. ABC Science News. [online] [cited 2000-05-22]. Available from the World Wide Web: <<http://more.abcnews.go.com/sections/science/DailyNews/ancienttree990421.html>>
- Gupta, Aarti. 1994. Combating deforestation: the role of existing agreements. Chart/Poster. New York, NY: United Nations Development Programme. 1 p.
- Helms, John A. ed. 1998. The Dictionary of forestry. Bethesda, MD: Society of American Foresters. 224 p.
- IPF. 1996. Report of the Secretary-General. E/CN.17/IPF/1996/18 9. Implementation of United Nations Conference on Environment and Development decisions related to forests at the national and international level, including an examination of sectoral and cross-sectoral linkages. Programme element I.5: Needs and requirements of countries with low forest cover. Commission on Sustainable Development, Ad Hoc Intergovernmental Panel on Forests, Third Session. 8-20 September 1996
- IUFRO. 1999. SilvaVoc terminology project. Vienna, Austria: International Union of Forestry Research Organizations. [online] [cited 2000-05-22]. Available from the World Wide Web: <<http://www.ersac.umn.edu/iufro/silvavoc/>>
- Kenneweg, H. 1994. Remote sensing and GIS contributions to securing the sustainability of forest environment under damaging influences. In: Singh, Ashbindu. ed. Proceedings - UNEP and IUFRO International Workshop in Cooperation with FAO on Developing Large Environmental Data Bases for Sustainable Development. Nairobi, Kenya. 14-16 July 1993. GRID Information Series No. 22. UNEP: Sioux Falls, SD. 29-39.
- Lund, H. Gyde. 2000a. Definitions of forest, deforestation, afforestation, and reforestation. [online]. Last updated/links checked on 22 May 2000 [cited 2000-05-22]. Available from the World Wide Web: <<http://home.att.net/~gklund/DEFpaper.html>>.
- Lund, H. Gyde. 2000b. Definitions of old growth, pristine, climax, ancient forests, and similar terms. [online]. Last update/links checked on 22 May 2000 [cited 2000-05-22]. Available from the World Wide Web: <<http://home.att.net/~gklund/pristine.html>>
- Prüller, R. 1996. Comparative study on terminology related to forest resources assessment. terms and definitions. Interim Report April. IUFRO Secretariat. (working document)
- Merriam-Webster. 1999. WWWebster Dictionary. [online] [cited 2000-05-22]. Available from the World Wide Web <<http://www.m-w.com/dictionary>>.
- Senanayake, Ranil. 1999. Email correspondence. <100232.3435@CompuServe.COM>
- UN-ECE/FAO. 1997. UN-ECE/FAO temperate and boreal forest resources assessment 2000 - terms and definitions. GE. 97-22231. Geneva. 13 p.
- UNEP/IUFRO 1999. Definition of low forest cover (LFC). 27 p.
- UNFCCC 1998. Official Documents, Subsidiary Body for Scientific and Technological Advice (SBSTA) Document FCCC/SBSTA/1998/INF.1. [online] [cited 2000-05-22]. Available from the World Wide Web <<http://www.unfccc.de>>

## How to Do Terminology Work in Forestry: Services Offered by IUFRO

Renate Prüller and  
Michèle Kaennel Dobbertin

### *Poster Abstract*

Efficient communication among scientists and with decision makers needs a precise and clear technical language. The network of IUFRO experts in forest science is an immense pool of living expert knowledge. Experts create the terms we use to communicate and thus constitute an ideal partner for IUFRO's services in their attempt to define and make accessible the forest technical language to a wider public.

At a time when English has become the *lingua franca* of science, it is crucial that other languages – and IUFRO has four official languages – keep playing an active role. This broadens the horizon of scientific thinking and knowledge, but also makes unequivocal communication more difficult to achieve.

Vocabularies, glossaries and terminological databases present the technical vocabularies and, if relevant, interpret them for the interested public. The role of forestry experts is to help and assist in this process of explication and definition of their own specialised language, in order to guarantee the high quality and liability of these communication tools.

IUFRO offers services with regard to terminological problems through its Working Party 6.03.02 „Trends in Forest Terminology“ and its terminology project SilvaVoc based in the IUFRO Secretariat, which are interrelated and pro-active. Additionally we will show how 6.03.02 and SilvaVoc incorporate IUFRO officeholders in terminology work and illustrate the most important services that are provided by 6.03.02:

- electronic discussion groups
- terminological hotline for telematic-based terminological assistance; and by SilvaVoc:
- on-line Bibliography of terminological publications in forestry
- terminological database SilvaTerm.

Traditionally IUFRO's role in terminology has been to make people aware of terminological differences. Our approach is therefore based more on descriptive than prescriptive principles, e.g. instead of aiming primarily at recommending definitions, it is our concern to point out differences in the use of the terms. Guidelines for quality forestry terminology projects will be distributed at the IUFRO World Congress.

As globally co-ordinated forest research becomes a priority in the context of sustainable management and global change, the need for concerted action in terminology will increase. Partners from various geographical and institutional backgrounds will have to base their collaboration on common definitions. They will also need to avoid duplicating terminological efforts. Together, WP 6.03.02 and SilvaVoc can significantly contribute to this collective effort by consolidating the network, resources and expertise they have built since 1995.

**Keywords:** Forest terminology, co-operation, terminology services



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## **PART 2**

### **Diversity in Forest Terminology - Selected Contributions -**

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# **Forsteinrichtung**

## **As Against Forest Management**

*Difficulties with the compilation of a multilingual terminology*

Othmar Griess, Horst Kurth, Günther Unterthiner

### ***Abstract***

*The concept of the English “forest management“ as against the German “Forsteinrichtung” is taken as an example to discuss the confusion that is caused by technical terms which have no identical equivalent in other languages. Providing clarification of technical terms and their different usage according to countries and languages was the reason for a group of forestry experts to embark on the work on a multilingual terminology.*

*In this paper we trace back the history of “Forsteinrichtung” in order to give a better understanding of the development of this concept in Central Europe, and of the reasons why there are differences in interpretation as compared to the English “forest management”. A graphic illustration of the concept “Forsteinrichtung” as against the English “forest management” shows the range of related German terms, like inventory, planning and control, in comparison with the terms in use in English.*

*At first priority was given to elaborating definitions individually and separately for each language. In the course of the work, and due to the tradition of “Forsteinrichtung” in German-speaking countries, it became necessary to flexibly adapt the methodology to the experts’ needs and to the respective situation.*

*The final result, the multilingual terminology “Terminologie der Forsteinrichtung“, presenting the German concepts and definitions and equivalent terms in seven languages, and its parallel publications in English, Spanish, and Japanese are available in the “IUFRO World Series“.*

**Keywords:** “Forsteinrichtung”, forest management, German, English, multilingual terminology

## **1. Introduction**

In the preface of the Vocabulary of Forest Management (Griess, 1990) the author already pointed out the problem of translating technical terms and the necessity of providing definitions in order to clearly describe the use of the terms in the individual languages. One reason for this is that the German technical term “Forsteinrichtung”, which has an equivalent in most European languages as it includes the practical side of forestry, was translated completely inadequately into English some time ago. This resulted in great misunderstanding and wrong interpretations. The term that is currently in use, “forest management”, has to be understood in a very general sense. It should have been translated correctly by “regulation of forests according to the principle of sustained yield” (Griess, Kurth, 1998) in order to express at least roughly what “Forsteinrichtung” has principally encompassed for more than 200 years.

The imprecise use of technical terms that refer to different contents and contexts in different languages causes the confusion which is the underlying subject of our in-depth work. It also happens in the German linguistic environment that the same term is defined differently or that different terms are used for the same concept. In the following paper we would like to discuss these problems, show differences in terms and meaning and try to answer the question as to why the German “Forsteinrichtung” has been translated into English with “forest management planning”.

## **2. Technical terms**

Each subject area develops its own and individual technical language. This is done by:

- creating or coining new terms (neologisms), or
- providing general words of a language with subject-related technical definitions.

In German as well as in English, the technical term “Haubarkeitsdurchschnittszuwachs”, (en) “final mean annual increment” may serve as an example of a new creation in the field of “Forsteinrichtung”. In principle, it is used for making a prognosis of the yield potential of a stand or, in sum, of a working circle.

Without an adequate definition it is particularly difficult to find the correct equivalent in another language. A few simple examples will illustrate this in a better way:

(d) “Holzboden”, (en) “forest land”. Whereas the English technical term is more or less unambiguous, we could understand it in German in more general terms as a wooden floor. The same phenomenon occurs with (d) “Massenerhebung”, (en) “volume determination”. In colloquial German, this could be understood as a mass uprising or revolution. The technical term (d) “Forsteinrichtung” (syn: Forstbetriebseinrichtung), (en) “forest management (planning)” belongs to this category. In German this composite term has nothing to do with (d) “Einrichtung”, (en) “furniture/furnishing forests with tables, or with feeding of deer etc., but it relates to (d) “ausrichten, ordnen”, (en) “align, order, structure and organize”. Consequently, in forestry the term relates to the activities of a forest enterprise which support the business management in order to run the forest enterprise in a sustainable way. The results of the (d) “Forsteinrichtung” are summarized in a (d) “Wirtschaftsbuch”, (syn: Kontrollbuch, Wirtschaftsplan) (en) “management plan”. It seems that the English translation “forest management planning” has resulted from the German (d) “Wirtschaftsplan” (en) “management plan”. The English neologism is still a much wider term as it does not necessarily include the concept of sustainability.

It often turns out to be better to treat technical terms that cannot be translated unambiguously into another language as proper names, i.e. not translate them but transfer them into the other language as they are and provide a definition or explanation in addition.

The historical background and the language of the country of origin play a special role in the development of technical terms in a special subject area.

### 3. German concepts

#### 3.1 Looking back on history

The term “Forsteinrichtung” is a technical term, which has been coined in the German conceptual world and constitutes a construct of long lasting development in forestry.

In the 15<sup>th</sup> century the forest area of Central Europe had been reduced by half due to 500 years of unregulated exploitation by deforestation/forest clearing and because the remaining forest areas were poorly stocked. A catastrophic situation threatened the timber supply of the industry and the firewood supply of the cities. Out of this critical situation, a regular and planned management of forests developed gradually on the basis of first forest inventories and laws. As a logical result, the concept of sustainability was born at the end of the 18<sup>th</sup> century. In 1713 Carlowitz addressed the concept for the first time in his “*Sylvicultura oeconomica*”, and G. L. Hartig (1804) defined that one must “... in fact, intend to exploit (the forest) in such a way that the descendants can benefit in at least the same way from it as the currently living generation.” This idea, which at the time was conceived in a purely material way for a specific forest enterprise, was soon extended to the global concept of sustainability to the benefit effects of forests, e.g. in the Austrian Forest Law 1952. The most recent European definition was published in “Our Common Future” (Brundtland Report) Helsinki 1987. Though it concentrates on the management, it requests the conservation of the ecosystem on a global level. Thus, the idea of sustainability has developed from the smallest unit (forest enterprise) and the yield to the global conservation of ecosystems.

In order to guarantee sustainability a regulatory instrument had to be created for the forest management of sustainable units, which, thanks to inventories, planning and periodic controls, had to assure and to control the sustained production: i.e. “Forsteinrichtung”. The reason why these developments did not take place outside of Europe is that, until late in the 20<sup>th</sup> century, there was an abundance of forests in other parts of the world so that those technical terms did not develop out of need. One exception in Europe is Britain, which, totally deprived of forests, was supplied with timber and wood from the colonies, and where, due to the orographical situation, no danger of avalanches or torrents existed.

In parallel to practical forestry the forest sciences developed. According to Brockhaus (1982) forest sciences are defined as: investigation into forestry and knowledge gained therefrom; comprising natural sciences, especially biological fundamentals, methods of management and exploitation of forests and the related economic, legal and political questions. This jumble of basic and applied research makes it difficult in particular subject areas to achieve clear delimitations. This holds particularly true for “Forsteinrichtung” which may range from remote sensing to cartography, forest growth, silviculture, forest health, managerial economics, to nature conservation and forest politics.

#### 3.2 Forsteinrichtung

The work flow in a forest enterprise is based on short-term planning synchronized with the management objective. The latter is subject to external restrictions (obligation by the forest law to respect sustainability) and internal restrictions and requires constant reaction to changing conditions. This process is nowadays called controlling. The basis of this system is the comparison of the actual status with the target of a forest

enterprise and the resulting medium to long-term planning. The necessary data are supplied by the “Forsteinrichtung” and its three sections - inventory, planning and control - for one forest enterprise or, within a forest enterprise, for one (d) “Nachhaltseinheit”, (en) “sustained yield management unit”.

### **3.21 Inventory**

(d) “Inventur” (syn : Inventar [ch], Bestandesaufnahme, Zustandserfassung): a) Periodic survey of stocking level and structure of a forest, and survey of site factors as a basis for setting objectives and planning production. It is also a means of controlling forest development and managerial decisions. In particular, it constitutes the basis for the establishment of a management plan. b) In some cases it comprises the collection of information on the forest in order to obtain answers to particular problems (forest assessment, air pollution damage).

### **3.22 Planning**

Besides general planning in the framework of forest politics, the planning in “Forsteinrichtung” is a planning for the individual enterprise and “... results from the demands related to sustainability” (Kurth, 1994) in a management unit.

(d) Planung (mittelfristig); Wirtschaftsplanung; Forsteinrichtungsplanung

Determination of economic and sustainable measures to be taken in the forest for a medium term of 10 to 20 years, based on forest inventory, management objectives and the evaluation of past developments. It comprises all parts of -> sustained yield regulation, -> production regulation and -> yield regulation. (Translation of the German definition in Griess, Kurth, 1998).

This type of planning aims at maintaining the sustainable production force considering all ecological aspects of a forest enterprise and must not be confused with other planning mechanisms in forestry. Planning is part of a permanent process of feedback and control, which assures that the set objective is reached. Forest political planning and the forest law naturally influence the planning in forest management, (d) “Forsteinrichtung”.

The English equivalent: (forest) management planning is defined as:

The planning process in a forest enterprise, in which particularly medium-term (10-12 years) decisions are made, based on long-term objectives and current (inventory) information, concerning the management of the forests. (Nieuwenhuis, 2000).

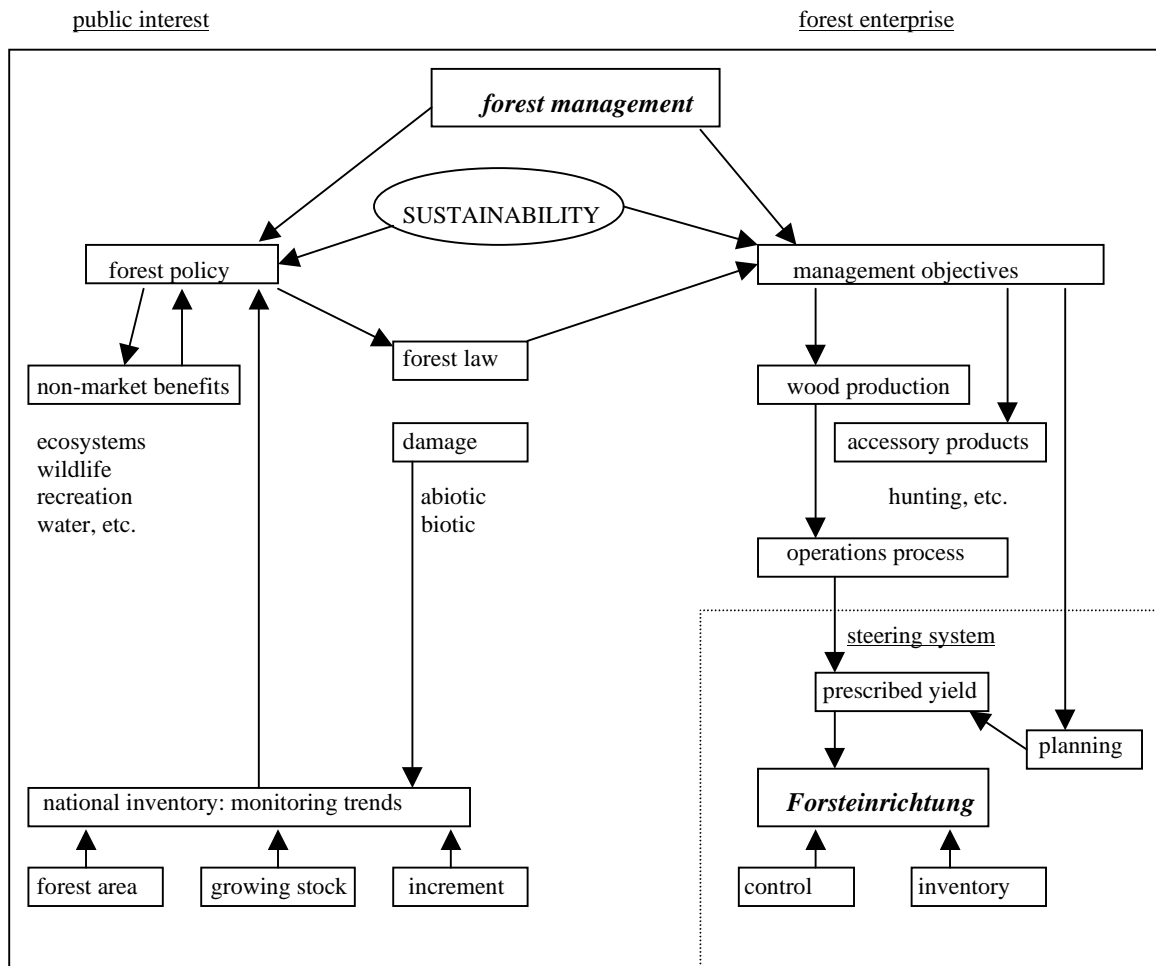
In opposition to the German definition, sustainability is not mentioned in the English definition. And Nieuwenhuis pointed out in a note: This emphasis on the medium term is peculiar to German speaking countries. Elsewhere, forest management planning is concerned with hierarchically integrated levels of planning.

### **3.23 Control**

Control, i.e. the comparison of the actual status with the target, is the basis for the planning process. Through controlling we assess how the actual status has developed as compared to the target in the previous management period. It represents the dynamic processes of change in the ecological field (forest development/condition) and forest yield assessment (performance control), examines the fulfilment of planned measures (cutting control), and the fulfilment of the planned harvest volume (control of forest production, (d) “Naturalkontrolle”). Control is, thus, the central factor for managing the work flow towards sustainability.

We would like to show that technical terms in “Forsteinrichtung” cannot be translated easily into other languages without knowing the underlying concepts, i.e. their definitions. This holds especially true if, the concept of sustainability for managing the individual forest enterprise is not embedded in the respective linguistic environment.

Forsteinrichtung as against forest management



**4. English concepts**

**4.1 Looking back on history**

It was mentioned under 3.1, that, until the past century, there were vast forest areas outside of continental Europe. This abundance and the low population density allowed the full exploitation of these forest resources. Only in the middle of the past century, did people outside Europe start to discuss the problem of sustainability and define the term sustainability. This process is not yet clearly finished. Here is one exemplary quotation, “We will never achieve sustainability if we don’t know what it is, but the literature can be confusing”. (Gale & Corddry, 1991) And, “The definition of sustainability used in

my own teaching for at least 20 years is as follows: maintaining the supply of as many benefits, goods and services at as high a joint level of each as can be reasonably supplied in perpetuity, without permanent loss of current resource management options.” (Whyte, 1994).

In the last quarter of the 20<sup>th</sup> century the number of definitions for sustainability grew in the English speaking environment. There is, for example, the definition used at the UNCED World Summit in Rio in 1992. Often these definitions are of a very global nature, sustainable management being only mentioned incidentally.

Outside of Europe the way that is followed is somewhat different from the Europe way, - the relation with the sustainable management of a forest enterprise as it is done in “Forsteinrichtung” is completely missing. Therefore there are no such technical terms.

#### **4.2 Forest Management**

The practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization, and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest - note: forest management includes management for aesthetics, fish, recreation, urban values, water, wilderness, wildlife, wood products, and other forest resource values - see biological legacy, ecosystem management, forest regulation, forestry, operations research, sustainable forest management, sustained yield. (definition in: Helms, 1998)

Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. These needs are for forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks and reservoirs, and for other forest products. Appropriate measures should be taken to protect forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases, in order to maintain their full multiple value. (definition in: FAO/ITTO, 1995)

From these definitions it becomes also evident that the information is not related to a forest enterprise or management unit but is of more general nature.

#### **4.21 Inventory**

Forest inventory.- 1. a set of sampling methods designed to quantify the spatial distribution, composition, and rates of change of forest parameters within specified levels of precision for the purposes of management. 2. The listing (enumeration) of data from such a survey - syn. Cruise, forest survey. - note: inventories may be made of all forest resources including trees and other vegetation, insects, and wildlife, as well as street trees and urban forest trees. (The Dictionary of Forestry, 1998)

There is no relation with surveying the fundamentals of a forest enterprise.

#### **4.22 Planning**

Besides the general term planning there is a technical term:

operational (forest) planning - the short-term, often annual, planning in the framework of long-term organizational objectives and medium-term (management plan) goals.

This definition follows the European hierarchy, but note that in the American usage it is different. The aspect of sustainability is not explicitly mentioned here.

#### **4.23 Control**

Control - formal comparison of all operations carried out in a forest enterprise with the prescribed ones so as to promote the fulfilment of the -> management plan objectives.

This includes explicitly the management objectives. If these include sustainability then they comply with the German technical term "Kontrolle".

### **5. (Im)Possible ways to compile a terminology of Forsteinrichtung**

Confronted with the task to compile a multilingual terminology, as this has been the case for the Working Party 4.07.04 SilvaPlan, it is important to place emphasis on specifically defining the terms as understood and used in the individual languages. The approach was thus individual for each language, in order to highlight the differences in scope and meaning of the terms between the different languages.

#### **5.1 Collaborators**

At the beginning the most difficult task was to find suited collaborators. They had to be familiar with the practice of Forsteinrichtung and they needed a good knowledge of their own languages. They also had to understand German sufficiently well to be able to judge if the definitions in the individual languages are identical or largely similar. The reason why so much emphasis was placed on German here is based on the historical fact that sustainable forestry and, originating from it, the field of "Forsteinrichtung", have primarily developed in the German-speaking part of Central Europe since the second half of the 18th century. There is also plenty of German technical literature on this subject, and thus, the technical terms have developed mainly in the German language.

#### **5.2. Delimitation of the subject field**

Another difficulty was the selection of the technical terms to be included. "Forsteinrichtung" deals with the sustained yield regulation in forest management based on the following classic division: inventory - planning - control. "Sustained yield" encompasses, among other aspects, ecological and silvicultural knowledge. "Regulation" means observation of trends in growth, in development of biotic as well as abiotic influences, and the corresponding reaction to changes. It is thus based also on phytopathology, entomology, and forest protection, but also on statistics and other areas such as forest growth and more recently, also controlling. "Forsteinrichtung" as a science belongs, as has already been mentioned, to the applied sciences. It is thus a product of many different branches of basic research, which often also have their own dictionaries and definitions nowadays.

### **6. Conclusion**

This report of the experiences made by a group of forest experts of the IUFRO Working Party 4.04.07 with establishing a multilingual terminology underlines the positive aspect of such an endeavour. It led the group towards a better and more efficient communication between the participating scientists and to a useful clarification of scientific terms and concepts.

The German version (IUFRO World Series Vol. 9-de. Terminologie der Forsteinrichtung. Begriffe und Definitionen in deutscher Sprache) of the terminology including definitions in German and equivalent terms in seven other languages has been available first for the above mentioned reasons. The parallel versions in Spanish, Japanese and English followed at regular intervals and can be ordered from the IUFRO Secretariat in Vienna. The work on the French, Hungarian, Italian and Chinese versions is in progress.



## **References**

- FAO/ITTO: Some definitions. Expert meeting on harmonization of criteria and indicators for sustainable forest management. 1995
- Gale, P.G.: Cordray, S.M.: What should forests sustain? Eight Answers. *Journal of Forestry* 89(5): 31-6, 1991.
- Griess, O.: Forstwirtschaftliche Informatik. *Allgemeine Forstzeitung*, 87. Jg., Folge 9, Wien 1976.
- Griess, O.: Vorwort zum Wörterbuch der Forsteinrichtung, IUFRO World Series Vol.1, IUFRO Secretariat, Vienna 1990.
- Griess, O., Kurth, H.: Terminologie der Forsteinrichtung, IUFRO 4.04.07 SilvaPlan und SilvaVoc, IUFRO World Series Vol. 9-de, IUFRO Secretariat Vienna 1998.
- Hartig, G. L.: Anweisung zur Taxation und Beschreibung der Forste, oder zur Bestimmung des Holzertrages der Wälder, Gießen, 2. Auflage 1804.
- Helms, J.: *The Dictionary of Forestry*. Society of American Foresters. 1998.
- Kurth, H.: Forsteinrichtung, Nachhaltige Regelung des Waldes, Deutscher Landschaftsverlag Berlin 1994.
- Nieuwenhuis, M.: Terminology of Forest Management; IUFRO 4.04.07 SilvaPlan and SilvaVoc, IUFRO World Series Vol. 9-en, IUFRO Secretariat Vienna 2000.
- Whyte, A.G.D.: Multiple-Objektive Modelling of the Sustainability of Forests, Proceedings IUFRO-Workshop on Sustainable Forest Managements, Furano, Hokkaido, Japan 1994.

[Translation from German by Renate Prüller and Gerda Wolfrum]

# Multilingual Glossary on Forest Genetic Resources – A Collaborative Initiative

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**Keywords:** forest genetic resources, multilingual glossary, collaboration, FAO, IUFRO

## 1. Introduction

At its Tenth Session, held at the Food and Agriculture Organization of the United Nations (FAO) in Rome in September 1997, the Panel of Experts on Forest Gene Resources recommended „that FAO and IUFRO, in collaboration with other relevant institutes, review and help revise and update existing terminology in the forest genetic resources field, concentrating initially on a core set of basic terms and concepts“.

Following this recommendation FAO and IUFRO embarked on a collaboration programme which involved the Forest Resources Development Service of FAO, the newly created IUFRO Task Force on Forest Genetic Resources and IUFRO's SilvaVoc terminology project. In a first phase a draft glossary of 20 forest genetic resources concepts was compiled and circulated as a hard copy among interested researchers. During the second phase, the glossary was improved and enlarged with another 21 terms and has been reorganized for presentation on the Internet.

In the following paragraphs we discuss and explain the reasons and ideas behind the work on the glossary and future perspectives.

## 2. Subject specific glossary work

Experience showed that among the institutions and organizations working in forest biological diversity or genetic resources there is seldom agreement about the understanding of commonly used specialized terms. And difficulties increase when a multilingual perspective is taken. Although the Convention on Biological Diversity (CBD) provides widely accepted reference definitions - which can serve as a starting point for harmonizing some terminology in forest genetic resources, - it has not been the intent yet of the glossary to present a standardized terminology only.

The main purpose of this glossary was to provide an overview of the current variety of definitions and of terms applying to concepts frequently used in the field of forest genetic resources. The objective of the glossary is not only to record established and widely accepted definitions of some common terms, but also to show the way and the sense some professions, organizations or countries use the terms, according to their own perspectives. Instead of providing one single definition, the glossary aims at providing, for a given key term, various definitions and meaning developed by various groups for their specific scope and objectives. It should reflect the diversity of users and their complementary approaches, and incorporate their definitions or explanations, in addition to providing standard, universal definitions (or tentative ones).

The forest genetic resources glossary will complement efforts undertaken by IUFRO, FAO, the CBD and other institutions, organizations and conventions, towards the development of agreed definitions on forests and the forestry sector.

### **2.1 Selection of terms**

The terms defined in the glossary were selected by FAO in agreement with the IUFRO Task Force on Forest Genetic Resources and SilvaVoc. Emphasis was placed on selecting a representative set of frequently used terms, especially those mentioned in the Convention on Biological Diversity, and related terms.

Sub-plenary papers presented during the last IUFRO World Congress, among others, have been screened and analysed according to the frequency of appearance of technical terms. The result was the basis for the selection of the concepts dealt with in the second phase.

### **2.2 Compilation of definitions**

A definition<sup>1</sup> is a statement which describes a concept and permits its differentiation from other concepts within a system of concepts. Ideally terminological definitions must be as short as possible, precise, generally valid in a discipline and in agreement with the state of the knowledge. In order to cope with the objective of the glossary, it was not always possible to restrict our efforts to such ideal definitions. The compiled definitions are often more of an explanatory type and sometimes include also context and usage descriptions.

The definitions were taken from printed and on-line documents available to the compilers. All sources are mentioned with the definition and additionally in a attached document called „References“.

### **2.3. Multilingualism**

Both, FAO and IUFRO strongly support multilingualism in their activities and publications. This is particularly true for terminology work. In this glossary, we have paid special attention to give equal importance to all official languages (Arabic, Chinese, English, French and Spanish at FAO; English, French, Spanish, German at IUFRO); thus definitions have been compiled, as far as possible, from original language publications, and not from translated documents. Terms and definitions are currently given in English, French, Spanish and German, with an understandable overweight of English definitions. It is planned to progressively cover all official languages of FAO and IUFRO with possible incorporation of equivalent terms in Russian. A set of Hungarian equivalents has already been compiled and it is planned to incorporate it in, or closely link it to, the present document.

### **2.4 Organization of the glossary**

The document consists of 41 key terms arranged in alphabetical and systematic order. The systematic order reflects the generic concepts and sub-concepts.

Key terms are English terms which were selected by the compilers to represent the concepts to be defined, e.g. „biological diversity“. All key terms correspond to an equivalent entry term in English, German, French and Spanish. In this glossary, entry terms are defined as alternative designations of concepts, for example “genetic marker” or “marqueur génétique”, or in some cases designations of not exact synonyms, for example between “gene flow” and “migration”.

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<sup>1</sup> See appendix 2: Definitions relating to terminology.

The presentation of the glossary on the Internet is different from the one on paper, as we could take advantage of using opportunities given by the media, like:

- parallel presentation of English and other languages key terms
- optional alphabetical or systematic index in all languages
- the reference definition, which figures on top, provides a preferred or tentative *harmonized* definition by the compilers. This could be a first step in an harmonizing process, and is meant to invite comments from users.
- all *top definitions* are followed by more definitions under the subtitle: other definitions and reflect the main purpose of the glossary, to give an overview of the current variety of definitions.
- easy switch from one to another language at any place.

### **2.5 Work in progress**

The first draft compilation has been circulated among scientists and organizations active in the field of forest genetic resources development to generate additional input of “in-house“ definitions. Comments received have been incorporated in the second compilation. The selection of definitions presented is of course non-exhaustive and arbitrary. Thus, the decision adopted to present the result on the Internet is also meant to make the glossary available to a wider public and to invite those using it, in a interactive process, to provide us with comments.

Forest genetic resources is a wide research field, which is rapidly extending outside technical areas into new fields, encompassing biotechnologies and genetically modified organisms, biosafety issues, legal matters, access to and exchange of germplasm and material transfer agreements, etc.. It is the intent to progressively incorporate more concepts, terms and definitions in the glossary, following new developments in the forest genetic resources field, and to develop links with closely related fields of forests and forestry, and plant genetic resources.

### **3. Concluding remarks**

From the beginning the importance of this glossary was in highlighting the diversity and variety of definitions in the forest genetic resources area. This approach was enlarged to a greater number of concepts and was modified for presentation on the Internet. It constitutes now a unique experience which combines diversity of definitions with an attempt of harmonization.

### **References**

The Convention on Biological Diversity. Art. 2. UNEP 1992.



# Trends in Forest Terminology: Current Activities and Perspectives

Michèle Kaennel Dobbertin

## 1. Introduction

The Working Unit 6.03.02 “Trends in forest terminology” was created in January 1996 as a counterpoint within the organizational structure to SilvaVoc, IUFRO’s clearing-house for terminology, which has been operational at the Secretariat in Vienna since January 1995.

The activities proposed within this Working Unit are underlined by the conviction that the most reliable, actual and relevant resources in forest terminology lie within those people who use and develop this terminology in their everyday research and other professional activities. Therefore we wish to develop a network of terminology-aware experts in forestry, forest products, forest ecology and neighboring disciplines, with three complementary objectives:

## 2. Directory of Experts

Over 400 experts in forest-related disciplines were contacted in 1996 and invited to join our Directory of Experts, agreeing hence to provide free and fast terminological assistance in their fields of expertise, in one or more languages.

The resulting database of over 100 experts has been available on the Web since 1996<sup>1</sup>. Information about the Directory has been mailed to the major electronic discussion groups on forest, ecology and terminology.

Questions and answers are exchanged on a person to person basis. However, users of the database are kindly requested to provide a short feedback to the database coordinator. In view of this feedback (or rather absence of feedback), it seems that the Directory of Experts has been very little used.

The idea behind the Directory of Experts has met wide approval and even enthusiasm wherever it has been mentioned. A better marketing and/or strategy should be applied before deciding to discontinue this service altogether.

## 3. Electronic Discussion Groups

Discussion groups on specific issues or concepts needing clarification or standardization of definitions and usage are operated via the Internet as moderated mailing lists. Their lifespan is determined by the moderator but should remain short (less than 6 months).

Our role as members of a broadly-based, international organization is to make people aware of terminological differences rather than to hide them, and, whenever relevant, also to point out conceptual convergences behind terminological differences. The discussions are therefore based on descriptive rather than prescriptive principles, i.e. they do not primarily aim at recommending definitions, but rather at pointing out geographical and cultural differences in term uses.

So far the following concepts have been explored:

- old-growth forests, natural forests, primary forests, virgin forests and related terms
- reforestation, afforestation and deforestation

- low forest cover
- forest health.

Technical support is coordinated by Brian Haddon, Natural Resources Canada, Deputy Coordinator of 6.03.02. Threaded archives are available on the Web site of Natural Resources Canada<sup>2</sup>.

#### **4. Terminological Awareness**

This activity was submitted by Prof. John Helms at IUFRO World Congress in Kuala Lumpur in August 2000, and has been coordinated by him since he was officially appointed Deputy Coordinator in January 2001.

With this new activity we intend to increase terminological awareness among IUFRO members. Before IUFRO workshops, meetings, or conferences<sup>3</sup>, we submitted to several organizers some terms and/or definitions related to the topic of their meeting, and which we think would benefit from clarification by the experts attending the meeting. Of course, if appropriate, the participants can discuss additional terms, but with a maximum of 10. The discussion may focus, e.g., on identifying recommended vs. non-recommended terms, on defining a few key terms of a specific field, or on pointing out differences in definitions between languages. The resulting information will be entered in SilvaTerm mentioning the contributing IUFRO unit. As we gain experience, we hope to submit such requests at all technical meetings of IUFRO.

#### **5. Conclusion**

Since the creation of this Working Unit, our activities have benefited from a creative and good-spirited cooperation with Renate Prüller, Coordinator of SilvaVoc. This cooperation must definitely be nurtured, among other in order to guarantee the consistency of terminology activities within IUFRO and in relationship with other major organizations (FAO, GFIS). Meanwhile, a more systematic effort should be made towards networking within IUFRO structure, i.e. with the men and women who are the depositories of forest terminology.

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<sup>1</sup> Directory of Experts: <http://www.wsl.ch/forest/risks/iufro/>

<sup>2</sup> Archives of discussion groups: <http://www.NRCan.gc.ca/hypermail/>

<sup>3</sup> Calendar of IUFRO meetings: <http://iufro.boku.ac.at/iufro/meetings/meet.htm>

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# **APPENDICES**

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**Appendix 1. List of abbreviations**

A21	Agenda 21
ARD	afforestation, reforestation, deforestation
CBD	Convention on Biological Diversity Conservation
CGI	Common Gateway Interface
COB	Convention on Biological Diversity
COD	Convention on Desertification
COP	Conference of the Parties (-> UNFCCC)
CPU	Central Processing Unit
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCCC	Framework Convention on Climate Change
FOWL	Forest and other woodlands
FRA	Forest Resources Assessment
FreeBSD	free UNIX operating system
HTML	HyperText Markup Language
IFF	Intergovernmental Forum on Forests
IIASA	International Institute for Applied Systems Analysis
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
IUFRO	International Union of Forest Research Organizations
IULA	Institut Universitari de Lingüística Aplicada, Spain
jpeg	image file
LCCS	Land Cover Classification System
LFC	low forest cover
MEXFT'98	Multilingualism and Expert Cooperation in Forest Terminology, workshop held in Kappel am Albis, Switzerland in 1998
OS	operating system
PC	personal computer
pgm	image file
PHP	hypertext preprocessor
PID	principal integral discipline
ppm	image file
RAM	random access memory
RCS	real-time conversion system
RD	Rio Declaration on Environment and Development
REALITER	Red Panlatina de Terminología
RITERM	Red Iberoamericana de Terminología
SBI	Subsidiary Body for Implementation (-> UNFCCC)
SBSTA	Subsidiary Body for Scientific and Technological Advice (-> UNFCCC)
SFD	sustainable forest development
SilvaVoc-J	SilvaVoc-Japan, partner of SilvaVoc in Japan
TOF	trees off forests
UNCED	United Nations Conference on Environment and Development
UN-ECE	United Nations Economic Commission of Europe
UNFCCC	United Nations Framework Convention on Climate Change
USDA FS	United States Department of Agriculture Forest Service
WCFSD	World Commission on Forest and Sustainable Development
WWW	World Wide Web

## **Appendix 2. List of Definitions Relating to Terminology**

Terminologists, maybe even more so than other subject-fields specialists, have problems agreeing on the terminology that they use within their own discipline (Wright & Budin, 1997), e.g. the terms vocabulary, glossary and dictionary are used with little uniformity. Therefore, some of the terms which may cause confusion are defined and annotated for the purpose of these Proceedings according to reliable sources.

### **concept**

A unit of thought constituted through abstraction on the basis of properties common to a set of objects.

Note - Concepts are not bound to particular languages. They are, however, influenced by the social or cultural background.

(ISO 1087:1990)

### **definition**

Statement which describes a concept and permits its differentiation from other concepts within a system of concepts.

(ISO 1087:1990)

### **dictionary**

*see* terminology and vocabulary

Structured collection of lexical units with linguistic information about each of them.

(ISO 1087:1990)

A book that gives a list of words in alphabetical order, with their meanings in the same or another language and usually their pronunciation.

(Longman, 1992)

Note - The distinguishing features of a dictionary are that it is generally construed to be a book that lists and defines the words in a language. Consequently, non-book-length collections are not dictionaries.

(Wright & Budin, 1997)

### **glossary**

*see* dictionary, terminology, vocabulary

Alphabetical list of terms or words found in or relating to a specific topic or text. It may or may not include explanations.

Note - The distinguishing criterion is that glossaries are considered to reside in backmatter attached to books and other publications rather than being independent works in their own right. Glossaries are sometimes perceived as being less scientific in intent and methodology than terminologies, terminology standards, and even vocabularies, although a certain degree of synonymy exists.

(Wright & Budin, 1997)

### **multilingual vocabulary**

List of terms relating to a specific subject field, together with equivalents and definitions (or explanations) in more than two languages.

(Hutcheson, 1994)

### **neologism**

1 A new word or expression, or a new meaning for an older word: *The term “user-friendly” is a neologism that has come into everyday speech from the computer industry.*

2 The use of such new words or meanings.

(Longman, 1992)

### **synonym**

A word with the same meaning or nearly the same meaning as another word in the same language.

(Longman Dictionary of English Language and Culture: Longman Group UK Limited 1992)

Note – Terminologists distinguish between *real synonyms*, i.e. terms which can be substituted with each other whatever the context, and the more common *quasi-synonyms*, which can differ from one another by context and sometimes by subject field (Sager, 1990)

**- synonymy**

**term**

Designation of a defined concept in a special language by a linguistic expression.

Note - A term may consist of one or more words or even contain symbols.

(ISO 1087:1990)

**terminological dictionary**

*see* dictionary and vocabulary

Dictionary containing terminological data from one or more specific subject fields.

Note - admitted term: technical dictionary

(ISO 1087:1990)

**terminology**

Structured set of concepts and their representation in a specific subject field.

(Wright & Budin, 1997)

The study of the relationships between concepts and terms.

(Sager, 1990)

**terminological database**

Structured sets of terminological records in an information processing system.

(ISO 1087:1990)

**terminology database**

*see* terminological database

**terminology work**

Any activity concerned with the systematization and representation of concepts or with the presentation of terminologies on the basis of established principles and methods.

(ISO 1087:1990)

**vocabulary**

*see* terminology, dictionary, glossary

Terminological dictionary containing the terminology of a specific subject field or of related subject fields and based on terminology work.

(ISO 1087:1990)

Note - Although vocabulary would appear to be synonymous with terminology, the semantic scope of vocabulary is broader in that terminology tends to be used with reference to serious disciplines (i.e., engineering, law, art, etc.), whereas vocabulary can be used to cover not only domain-specific words, but general language words as well.

(Wright & Budin, 1997)

**Sources:**

Hutcheson, H.M. : Preparation of Multilingual Vocabularies”, Standardizing and Harmonizing Terminology: Theory and Practice, ASTM STP 1223, Sue Ellen Wright and Richard A. Strehlow, Eds., American Society for Testing and Materials, Philadelphia, 1994.

ISO 1087: 1990 International standard: Terminology-Vocabulary

Longman Dictionary of English Language and Culture: Longman Group UK Limited 1992

Sager, J.C., 1990: A Practical Course in Terminology Processing. Amsterdam/Philadelphia, John Benjamins.

Wright, S.E.; Budin, G., 1997: Handbook of Terminology Management. Vol.1. Basic Aspects of Terminology Management. Amsterdam/Philadelphia, John Benjamins. 370 pp.

## **Appendix 3.**

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## Appendix 4

### QUESTIONNAIRE

Please fill in the following questionnaire and send it to Ms. Michèle Kaennel or Ms. Renate Prüller. Your answers will be treated absolutely confidentially and evaluated anonymously.

Thank you very much for your interest and for taking time to help us make a survey of your needs and expectations from our services.

#### Are you interested in IUFRO's activities and initiatives in forest terminology?

We are concerned about "bringing terminology to the people", i.e. making scientists, experts and other users aware of the existence of methods for terminology and of their potential benefits. Your answers to this questionnaire will help us meet your needs better.

#### 1) About yourself:

- a) Where do you work?  
 University  Forest Research Institute  Private Company  
 Other \_\_\_\_\_
- b) Is this a IUFRO member organization?  
 yes  no
- c) What is your position in the institution:  
 Research professional  Professor  Research manager  
 Technician  Translator/Interpreter  
 Other \_\_\_\_\_
- c) Are you involved in terminology work of IUFRO 6.03.02 or SilvaVoc?  
 yes  no
- e) What is your mother tongue? \_\_\_\_\_
- f) What is your working language? \_\_\_\_\_
- g) What is your email (optional)? \_\_\_\_\_

#### 2) Experience in terminology work

- a) Have you already been involved in terminology work?  
 yes  no
- b) If your answer to 3b was yes, for the production of a:  
 -  glossary  
 - other \_\_\_\_\_
- c) If your answer to 3b was yes, have you done it:  
 -  alone  
 -  in team work



- in one language
  - in more than one languages
- d) If your answer to 3b was yes, how many terms were processed?
- |                                   |                                    |
|-----------------------------------|------------------------------------|
| <input type="checkbox"/> 50       | <input type="checkbox"/> 100 - 800 |
| <input type="checkbox"/> 50 - 100 | <input type="checkbox"/> >800      |
- e) If your answer to 3b was yes, which were the problems you encountered?

### 3) Forest terminology: theoretical background

- a) Do you want to know more about the technical language of terminology management,
- e.g. what is a:
- concept,
  - term,
  - equivalent term
  - synonym
  
  - glossary,
  - dictionary
  - other .... \_\_\_\_\_
- b) Do you have a need for more theoretical information on terminology?
- different approaches to terminology management
  - terminology standardization
  - monolingual terminology management
  - multilingual terminology management
  - terminological records
- d) Do you have a need for practical instructions for terminology work?
- yes       no

#### 4) Documentation

a) Which documentation sources for forest terminology do you know/use (please list) ?

- Libraries \_\_\_\_\_
- Electronic sources \_\_\_\_\_
- Other sources \_\_\_\_\_

b) Do you find the information you need?

**Monolingual:**

*English*

- always    usually    sometimes    never

*Other languages*

- always    usually    sometimes    never

Multilingual

- always    usually    sometimes    never

I would like to have more information on monolingual terminologies in:

Language \_\_\_\_\_

Domain: \_\_\_\_\_

I would like to have more information on multilingual terminologies in:

Language combination: \_\_\_\_\_

Domain: \_\_\_\_\_

#### 5) Use of forest terminology

a) What kind of terminological products do you use:

- Monolingual dictionaries of general language
- Multilingual glossaries
- Terminological studies
- Term database
- Electronic discussion list on specific concepts

b) For which purpose(s)?

- to find the equivalent term in another language
- to better understand the meaning of a concept
- to check the abbreviation of a term
- to use as a “corpus” for terminology work.

**6) Co-operation in forest terminology?**

a) Would you like to contribute to terminology work?

- in your institution
- in IUFRO
- other: \_\_\_\_\_

b) What kind of guidelines/instructions do you need?

- project-specific support
- general guidelines for terminology work
- specific instructions on how to write a good definition
- other: \_\_\_\_\_

c) How would you rather work?

- per e-mail
- gather in meetings
- combination of e-mail, snail mail and meetings
- with the collaboration of a terminologist
- co-operation with subject field specialists
- in one language
- in several languages

**7) In which subject areas should IUFRO increase its terminological effort?**

- agroforestry
- forest management
- forest genetics
- forest pathology
- forest ecology
- others: \_\_\_\_\_

And in what languages? \_\_\_\_\_

**7) Is there anything else that you want to tell us?**

## Appendix 5: A Short Guide to Terminology Work

### **Terminology**

1. Structured set of concepts and the terms used to represent them in a specific subject field.

2. The study of the relationships between concepts and terms.

### **Concept**

A concept is a unit of thought, not bound to a particular language, but potentially influenced by a social or cultural background.

### **Term**

The linguistic representation of a concept, characterised by special reference within a discipline.

### **Definition**

The linguistic description of a concept, based on the listing of a number of characteristics.

You are familiar with the terminology of one or several fields of expertise, in your mother tongue and/or in other languages.

You need to convey this terminology to translators, fellow scientists from another country, or students unfamiliar with your field of expertise.

You wish to harmonise the use of your specific terminology within your lab, your logging company or your research team.

You would like to submit your terminology for inclusion in an international terminological database.

In terminology, the theoretical foundations are rarely if ever applicable in practice. We have tried, however, to present here the main steps and underlying principles of a terminology project. A more comprehensive version of this guide will be distributed in early 2003<sup>1</sup>.

### **1. Am I about to re-invent the wheel?**

Even if your field of expertise is very new or narrow, some of the concepts you plan to define may already have been defined in a printed or electronic glossary. Check with your library, especially for "grey literature", or look up one of the many terminological link collections on the World Wide Web<sup>2</sup>.

However, beware of bad sources! For example, a dictionary written by a single author is less reliable than a dictionary written by a group of experts. Even then, in the case of multilingual glossaries, the authors should include native speakers of all the language represented.

If no (or no reliable) terminologies are available or only with definitions inadequate for your target audience, go ahead with your terminology project!

### **2. A terminology for whom?**

A terminology in the sense of "collection of concepts and terms" should always be *user-oriented*. Therefore you should first identify your target audience in order to provide them with the relevant type of information.

### **3. Keeping tracks**

All the decisions and steps made from now on should be documented, for your own usage and for that of terminologists or other users of your terminology.

### **4. Printed or electronic terminology?**

The information relevant to each concept will be structured in a *terminological record*. Terminological records can be stored and managed either in printed format (as text files) or in electronic format in a *terminological database*.

If you intend to include less than 50 concepts there certainly is no need for a terminological database, unless you are familiar with a database managing system.

<sup>1</sup> The appended questionnaire is intended to help us adjust the final version of our guide to your expectations. We would appreciate if you could take a few minutes and fill it in, either in paper or in electronic form (<http://iufro.boku.ac.at/iufro/silvavoc/quest.htm>), and send it back to us.

<sup>2</sup> See for example <http://www.uwasa.fi/termino/collect/forestry.html> or <http://iufro/boku.ac.at/silvavoc/biblio/biblio.htm>

## 5. What is the minimal terminological information?

Whether you intend to have your terminology collection included in a major terminology database or not, the information you will collect should be presented in structured terminological records. Your work will be facilitated and your terminology collection can easily be included later on in a terminological database, if desirable.

Standard fields of terminological records include:

<b>Compulsory terminological fields</b>	
<i>Entry term</i>	Any designation of a concept heading a terminological record. Should be in masculine, singular for nouns, infinitive for verbs. In the case of phrases and compound words, the words should be in the natural order. We advise to consider idiomatic phrases as entry terms.
<i>Definition</i>	Definitions should be short, precise and stylistically homogeneous. They should not be circular, i.e. should not use the entry term to be defined. They should give the essential characteristics of a concept, which identify this concept with respect to all others in a particular subject field. In the case of multilingual terminologies, definitions are a prerequisite for testing equivalence between languages.
<i>Source of the definition</i>	Written or oral source of the definition
<i>Source of the term</i>	Written or oral source of the entry term
<i>Synonyms</i>	Synonyms are terms with identical meaning in any context, i.e. which can be substituted to the entry term in all contexts. Real synonyms are rare.
<i>Variants</i>	These include terms with almost identical meaning, but which cannot be substituted to the entry term in all contexts, and spelling variants, developed or short forms of the entry term.
<i>Abbreviated form</i>	Term resulting from the omission of any part of a term while designating the same concept. Types of abbreviated forms include: short form, abbreviation, initialism, acronym, clipped term.
<i>Comments</i>	e.g. regional usage, level of speech
<i>Term status</i>	e.g. normalised, official, obsolete, neologism, preferred, tolerated, deprecated
<i>Subject field</i>	Field of human knowledge to which a terminological record is assigned. Unless the domain of your terminology is extremely narrow and/or the number of entry terms is very small, you probably need to distinguish between several subject fields within your domain.
<i>Related terms</i>	e.g. "part of...", "type of..." (e.g. in taxonomy), "product of...". Depending on your domain, this field can include several types of related terms, or be divided into several fields.
<i>Equivalent in other language(s)</i>	In the case of bi- or multilingual terminologies (see 9.)
<i>Partial equivalent in other language(s)</i>	In the case of bi- or multilingual terminologies (see 9.)
<b>Management fields</b>	
<i>Identification number</i>	A unique number for each terminological record
<i>Language</i>	The language of the entry term
<i>Date of creation</i>	
<i>Date of modification</i>	
<i>Creator of the record</i>	(If you are not the only creator)
<i>Record status</i>	Code indicating the level of completeness and accuracy of an entry within a terminological database. Especially useful if you are not the only creator or if you collect terms in a foreign language or in a subfield you are not very familiar with.

In addition, you may find the following fields relevant or useful:

<i>Grammatical note</i>	e.g. plural and declined noun forms, irregular verb forms. This is usually not necessary if your terminology is intended for translators.
<i>Context</i>	Text or part of a text in which a term occurs, taken from the literature, not from dictionaries!
<i>Note</i>	Statement that provides further information on any part of the terminological record. Especially useful for students.
<i>Cross-reference</i>	Category or pointer field or record used in a database for navigation (chaining or jumping) to another related location, e.g. another record.
<i>Illustration</i>	Photograph, drawing, diagram, chart, mathematical formula, etc.

## 6. Where to start and where to stop?

There is no common agreement on the scope of any one subject field; decisions on which terms to include are left up to you, depending on the time available to you, the degree of “terminological exploration” in your domain and the purpose of your terminology. If it is used only by you, your close co-workers and/or a specialised translator, you certainly can restrict its scope to core concepts. If it is used by students, you may have to add concepts from neighbouring domains.

Terms from the general vocabulary may be included if they are sensitive and relevant to your domain, e.g. “damage” in the domain “forest health”, or if they require cautious translation, e.g. “prehistoric”.

In most cases, it is much more productive for subject specialists to restrict their terminological activities to a small set of very specialised concepts.

## 7. Original or borrowed definitions?

In addition to definitions inspired from your own experience and knowledge of the domain, you can find terms and definitions in scientific and technical literature, textbooks and reports in original language, preferably to any translation, or in dictionaries (see 1.). These documents constitute your *corpus*.

If you intend to create a comprehensive terminology of your domain and/or if your terminology is used by non-specialists (e.g. students, translators), include all the terms occurring repeatedly in your corpus, even if you do not consider them to belong to a specialised vocabulary *stricto sensu*.

The information collected from your corpus can be used in several ways:

- You can include existing definitions or use them as a source of inspiration to build your own definitions.
- If you aim to follow a descriptive approach, include all the variants that you encounter in your corpus.
- If you aim to harmonise the use of certain terms for your own purpose or that of your partners, include all the known variants and define their status (e.g. recommended term vs. deprecated term, synonym).

## One or several records per term? One or several terms per record?

The next stage consists in deciding which terms will be included in the final collection, and in structuring the available information into terminological records.

As a rule, always create **one record per concept**. If a given term refers to more than one concept, a separate record should be created for each concept. However, this situation is rare within the limits of a domain, especially if this domain is narrow.

The next question is whether each term should be assigned its own record, or whether all the variants and synonyms of a term should be grouped under one single entry. This decision is theoretically left up to the author of the terminology. We recommend the first solution – **one term per record** – because all synonyms and variants should be fully documented with a mention of their source, usage and status. However, all the synonyms and variants of a given entry term should also be listed in the relevant fields in the terminological record of this entry term. For example:

<b>Term</b>	biological diversity	<b>Term</b>	biodiversity
<b>Status</b>	not recommended	<b>Status</b>	recommended
<b>Synonym(s)</b>	–	<b>Synonym(s)</b>	–
<b>Variant(s)</b>	biodiversity (recommended)	<b>Variant(s)</b>	biological diversity bio-diversity

**Equivalence**

When there is equivalence between two languages, concepts correspond completely in these two languages, i.e. they are fully identical: there is only one concept, and the term in the source language and the term in the target language designate this one and only concept.

Among several variants, which one is the "proper" term?

In practice, the co-existence of variants is unavoidable and practically necessary, e.g. short forms of compound terms, trade names of equipment, etc. Among several variants, the one regular and proper term for a concept is defined by one of the following criteria (in this order):

- It has been defined by an international standard
- It has been recommended by an international body of experts
- It is the most widely used
- It is locally used.

**9. What about multilingual terminologies?**

*"Good terminologies reveal differences, bad ones conceal them."*  
(Ford-Robertson, 1971)

● *Equivalence* is or should be the principle underlying any bi- or multilingual terminology. Terminological records in different languages can be matched only if equivalence is fully verified.

Another strict principle is the collaboration of *native-speaker subject specialists* and the use of a corpus of original texts, not of dictionaries nor translations.

Even more than in monolingual terminology projects, the establishment of multilingual terminologies strongly relies on teamwork. Depending on how ambitious your project is, your project may need the participation of a *terminologist*.

In practice, establishing a bi- or multilingual terminology means that you:

- create terminological records for each concept in each language, based on information from your corpus or on the expertise of native speakers;
- once you have defined a concept in a language A, **do not just translate the definition** into a language B of your terminology project, unless language B has exactly the same concept. Use original definitions instead;
- once the monolingual terminological records are complete, each record can be matched with records in other languages whenever and only when the principle of equivalence is verified. In practice, the equivalent(s) of a given entry term may then be mentioned in the field "equivalent".
- do not try to "force" a concept into other languages. Remember that a concept in a given language may be slightly different or even unavailable in other languages. In the absence of equivalents, mention partial equivalents in the relevant field. If possible, add a note to point out the difference between the concepts in the two languages.

**In short, your project should include the following steps – in this order:**

1. **Inventory the existing terminologies**
2. **Identify your audience**
3. **Open a project diary**
4. **Decide how the information will be stored, managed and distributed**
5. **Create the structure of your terminological records**
6. **Set the limits of your work and of your terminological domain**
7. **Collect information**
8. **Create records**
9. **In case of multilingual terminologies: identify equivalences and partial equivalences and match them**

**Partial equivalence**

Often, rather than being totally equivalent, concepts in different languages correspond only partially. Where partial equivalence occurs, it is essential to determine the extent to which the term of the source language can be rendered by the term.

We will gladly try and help you if you need further information:

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