Commission of the European Communities

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MEDITERRANEAN FOREST TREES

A GUIDE FOR CROWN ASSESSMENT

MEDITERRANEAN EXPERTS WORKING GROUP

Poslan dra N. Klemenovića

Publication financed by the Commission of the European Communities (EC Regulation 3528/86). The International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (ICP-*Forests*, UN/ECE) provided an integrative contribution to the print costs.

Printed in Italy

Cover photo: *Juniperus phoenicea* L., 5 % crown transparency. *Inset: J. phoenicea*, 15%, 35 %, 50 % and 80 % of crown transparency (photo by Azienda Foreste Demaniali della Regione Sarda, Italy).

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Note. To incorporate the comments of each Author, several chapters have had to be substantially re-drafted. Therefore some of the chapters presented in this handbook may no longer be directly attributable to their original Author.

Translations. The English translation of the master version was prepared by Lisa Clark. Each Author has provided the translation in his own language. J. Mirault and A. Schwyzer kindly supplied the French and German translations.

Drawings. All the drawings are the work of Mr. Andrea Bertacchi (*Dipartimento di Scienze Botaniche, Università di Pisa, Italy*) except those pertaining to *Quercus suber* and *Q. rotundifolia* which are by Mrs. Elsa Esteves and Mr. Josè M. Arujo (*Instituto Florestal, Lisboa, Portugal*).

Acknowledgement. The Authors thank J. Mirault (*Ministère de l'Agriculture et de la Pêche, Département de la Santé des Forêts, France*) for his valuable contribution to the final wording of the texts. We also owe a debt of gratitude to N. Komlenovic (*Forest Research Institute, Croatia*), Ramòn Montoya (*Servicio de Proteccion de los Montes contra Agentes Nocivos, ICONA, Spain*) and A. Schwyzer (*Swiss Federal Institute for Forest, Snow and Landscape Research, Switzerland*).

Offprint request. This publication is available from each Author, as well as from Mr. Thomas Haussman, Commission of the European Communities, 200 Rue de la Loi (L120-10/197 A), B-1049 Brussels, and from Mr. Martin Lorenz, Bundesforschungsanstalt für Forst- und Holzwirtschaft, ICP-*Forests*, Programme Coordinating Centre West, Leuschnerstrasse 91, D-21031 Hamburg. Copies are available in the following languages = English, French, German, Greek, Italian, Portuguese, Spanish.

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CONTENTS

FOREWORD

Evidence of decline in the condition of forests in some parts of Europe and North America has been reported by many Authors ever since the 1970s and linked through a complex system of interrelations to a variety of environmental factors including climate fluctuations and/or changes and air pollution. Presumably, these factors are all active all the time; but in specific situations, as a result of spatial and temporal variations, their role may differ, and they may act as predisposing, contributing or inciting factors.

Obviously, in-depth knowledge of the status of forests and its spatial and temporal evolution is an element of fundamental importance: but it is equally obvious that this knowledge will only be fully useful if data are collected according to criteria of comparability and homogeneity in different countries and even in different surveys in the same country.

Since 1984 national surveys, based on visual assessments of crown condition by trained teams of surveyors, have been carried out. A great deal of progress in the field of harmonization of crown assessment and evaluation criteria has been made since then, including the drafting of the *Manual on Methodologies and Criteria for Harmonized Sampling, Assessment, Monitoring and Analysis of Air Pollution Effects on Forests* (in use since 1987) and the organization of a series of international training courses on the assessment of crown conditions both in Central and Northern Europe (the first one was held in Freiburg, Germany, 1987) and in Mediterranean countries (the first one in Morella, Spain, 1987).

It soon became evident that, although the situation calls for harmonization of methods, great care is necessary, since there can be a considerable risk in applying acritically methods and criteria originally developed for use in totally different environmental conditions. This is especially true in the case of Mediterranean forests, where the specific composition and structure of the woods and, as a result, the symptoms of decline are frequently totally different from those observed in the forests of Central and Northern Europe, the ecosystem for which the survey and study methods were originally developed.

In consideration of these issues, the *Mediterranean Experts Working Group* has been active since 1987 with the fundamental support and the full assistance of the *Commission of the European Communities* (EC) and within the framework of the *International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests* (ICP-*Forests* - *United Nations Economic Commission for Europe*, UN/ECE). The Group's activity is mainly aimed at harmonizing the assessment criteria and methods used in the evaluation of forest condition in countries of the Mediterranean region.

The production of this Photoguide is a result of the work of the Group: its purpose is to help in the assessment of crown condition in typical Mediterranean trees. The guide was produced thanks to the close collaboration of experts from several countries. The technical and financial support provided by the EC and the contribution of the ICP-*Forests* made the whole project possible.

The Photoguide illustrates 23 species (12 broadleaves and 11 conifers) at 5 progressive stages of crown transparency. A brief description of each species, with explanatory draw-

ings, is also included. This handbook is ideally a continuation of the book *Observation of Damages to Mediterranean Forest Species*, although its contents, structure and practical purposes differ. Unlike the earlier publication, this Photoguide addresses only the practical problems related to assessing crown status, without distinguishing between the different possible causal agents. As well as illustrating photographically the various classes of crown transparency, the guide also provides a brief description of the main patterns of crown density reduction in the species in question. Also important is the fact that the assessment standards are not based on non-proportional classes of crown transparency (*i.e.*, Class 1: >10-25% crown transparency; Class 2: >25-60%), but on a more precise scoring method using a proportional classification into 5% classes, a system which reduces the margin of interpretation on the part of the surveyor.

This handbook will complement and integrate the activity of the yearly training courses. The idea was first proposed during those meetings and the final project is the result of ongoing discussions and exchanges of opinions and informations between the experts from the different countries. The ultimate goal is to improve both harmonization and standardization levels.

Yet, despite all efforts at co-ordination and harmonization, it would not be realistic to deny that there still exist differences between the various countries as far as some of the assessment criteria are concerned, such as for example the part of the crown to be included in the assessment in the case of certain species (e.g. *Pinus pinaster*) or certain situations (e.g.: secondary crown, dense coppices). Some countries and/or regions have in fact already developed their own procedure which they follow in dealing with special situations not contemplated in the common *Manual*. To change their procedures abruptly would mean that their data could no longer be compared to previous data, and this is certainly not an acceptable cost. The authors do not feel that it would make sense to work only towards the elimination of all discrepancies in assessment criteria, obliging every country from now on to abide strictly by uniform assessment standards. We feel that it would be more useful to point out these differences, to discuss them and try to overcome them.

The present Photoguide therefore suggests general assessment criteria and standards for those species on which the experts agree, leaving out those cases where there are differences of interpretation. Top priority in all further activities of harmonization will be given to definition and clarification of the assessment criteria where there are still discrepancies. Furthermore, as will be obvious to the reader, there is still a shortage of information regarding the process of crown deterioration of some forest species; as a result, the descriptive texts of these species are not always consistent with the overall text pattern.

In the light of these considerations, the Authors wish to stress the fact that this handbook should be seen as a reference tool open to improvements, to contributions also by experts from other Mediterranean countries and/or regions, and indeed any expert on Mediterranean type vegetation.

The Authors hope that this Photoguide will indeed be useful to all those who every year survey the status of our forests.