

PREFACE

In past decades, forests and forest products in many areas of the world were considered to be unlimited. As the human population increased from less than 1 billion to more than 6 billion, much of it in the past century, most of the surplus forests of the world were greatly diminished. Measures of conservation once thought unnecessary are now thrust upon us whether or not we like it. The alternative to forest conservation is an enormous population crash infinitely greater than that experienced at Easter Island in prehistoric time when those people eliminated their only source of canoe production and, thereby, their only means of reaching their principal food resource (Diamond 1995). Their population dropped quickly from an estimated 15,000 to about 300 due to starvation or malnutrition.

Bark and ambrosia beetles have been among nature's principal foresters from ancient times until now. Their activities in the recycling of limited forest resources were considered beneficial. In some countries it has been a normal practice to ignore or disregard the loss of half or more of the annual forest production to damage caused by these insects. The effects of insect-transmitted diseases, timber destruction from insect attack in standing forests, either directly killing trees or interfering with seed production, and the devaluation of logs or forest products from devastation must be recognized, reduced, or eliminated in order to more efficiently utilize forest resources. Great progress has been made in these areas in Europe, North America, and several other regions in recent decades. In some other areas, a lack of knowledge and the vastness of the problem have resulted in the diversion of limited financial resources to needs given higher priority, thus, at least partly ignoring the problem. In country after country I have been told "These insects are not a problem here, because they attack only

unthrifty, diseased, and broken trees." Then I walk into their forests and find beetle devaluation and destruction they do not see. The problems are there to those who know where and how to look for them.

It is hoped that this volume will enable others to see the need to recognize the species of bark and ambrosia beetles that occur in or are exported from South America, to investigate their habits, behavior, etc., and to find out exactly what they are doing and why they are doing it in plant species that may ultimately determine our survival.

The compilation of this volume began on 5 December 1995, more than 6 years after my retirement from professional employment, and against my better judgement. However, the need expressed by plant protection colleagues was sufficiently urgent that it was apparent my declining talents were needed. My age was such that I never expected to see this volume completed. Because my time was limited and because curatorial assistance was lacking where some important repository collections occur, my search for the types of several species named early in the previous century could not be borrowed, and my age prevented me from traveling to search for them. While the US Forest Service, USDA (through Dr. Robert Haack) generously provided funds to prepare photographs for illustrations and for publication of the volume, and the M.L. Bean Museum (Brigham Young University) provided space and facilities in which I could work, without research assistants and limited travel funds, progress was slow. With generous advice from the museum staff, the entire volume was entered into the computer by myself. The magnitude of this project was enormous, but the opportunity to engage in this pioneer project has been most rewarding. It is hoped this volume will provide the stimulus for my successors to greatly expand and correct what was accomplished.