



# FOREST ENTOMOLOGY

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## PREFACE

Since 1929, when the first edition, "Principles of Forest Entomology" was published, great advances have been made in the field of forest entomology. We have not only learned much that is new about the insects themselves but, what is still more important, we have learned much more about the ecology of forest pests. As a result of this increased knowledge, we can often predict from the character of the forest whether or not a stand is likely to suffer from insect pests. In the case of some tree species, we can predict with considerable accuracy whether or not an individual tree will survive for a five-year period; or we can say with confidence that those trees in a forest exhibiting certain characteristics will be less likely to be killed by insect pests than other trees in the same stand having less desirable characteristics. The development of new synthetic insecticides, especially DDT, has greatly increased the practicability of direct control of forest insects. The result has been to encourage large-scale control operations under conditions that would have presented insurmountable difficulties in 1929.

As a result of these changes, the preparation of this revision has been far more difficult than in 1939 when the second edition was published. Much of the new material presented here is based upon personal observations in the field and on unpublished reports. The changes in control techniques and the other developments have required almost complete rewriting of the text so that this third revision is virtually a new book.

This is a book on forest entomology and not on forest insects. The insect species that are discussed are selected to illustrate principles and control practices. Other species might have served equally well for these purposes, and in using this book for a text the teacher may prefer to substitute some other species. With this possibility in mind, references to other species, not mentioned in the text, and additional selected references concerned with control practices and principles are included in the bibliography. The bibliography is arranged by chapters and, as a rule, a publication is listed only once. Reference to the general index will indicate the page on which a citation is listed.

During the revision, many foresters and entomologists rendered valuable advice and assistance. For this aid I express my sincere gratitude. Much unpublished material, reports, and manuscripts were made available for use. This generosity on the part of the authors has made it



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