
Fire is clearly an important ecological force throughout much of the northern circumpolar forests and taiga, playing a major system role and presenting a land management problem. This volume of SCOPE 18 is based on an October 1979 conference sponsored by SCOPE, International Man and the Biosphere, and the Fire Science Centre of the University of New Brunswick. The stated objectives of this book and conference are to identify which temperate-region fire concepts or theories apply to the circumpolar north and which concepts are unique to northern ecosystems. Fifteen chapters, contributed by principal authors representing Canada (nine chapters), the United States (three chapters), the U.S.S.R. (two chapters) and Finland (one chapter), cover topics divided into five sections, with an introductory overview by the editors, R.W. Wein and D.A. MacLean.

The first section considers 'Past and present fire frequencies' from post-glacial time (K. Tolonen) to the present industrial period (R.I. Barnet and B.J. Stocks). Tolonen's review of sedimentary reconstructions of post-glacial fire histories is outstanding and covers both Europe and North America. The section 'Physical effects of fire' next examines fire behavior in northern forests and shrublands (C.E. Van Wagner) and organic soils (R.W. Wein), effects of fire on the ground thermal regime (the late R.E. Brown), and nutrient cycling (D.A. MacLean et al.) in northern ecosystems. Van Wagner's chapter here provides a lucid basis for understanding the physical parameters of fire behavior and proposes the idea of the negative exponential age-class distribution as a model for managing boreal forest vegetation stands. A section on 'Concepts of fire effects on individuals and species' specifically considers plant individuals and species (J.S. Rowe) and small mammal and bird communities (J.F. Fox). Rowe's contribution is the outstanding chapter in the book, in this reviewer's opinion; it is much more than a synthesis of the literature in that it proposes new concepts of species fire adaptations in terms of five strategies which boreal forest and tundra plant species have evolved for coping with fire. Rowe then applies these adaptive strategies to different fire regimes and predictions of post-fire succession.

The section 'Fire effects in selected vegetation zones' includes reviews of the role of fire in jack pine (Pinus banksiana Lamb) (J.H. Cayford and D.J. McRae), in black spruce (Picea mariana [Mill] B.S.P.) (L.A. Vierveck), and in fir-dominated forests (V. Furuya et al.), as well as the lichen-dominated tundra and forest-tundra (A.N.D. Acclair). Unfortunately a more general discussion or survey of fire effects in tundra is not included here or elsewhere in the book. The final section, 'Fire control and management', includes chapters on the special problems of fire control and prevention in commercial peatlands in the U.S.S.R. (V.I. Chistjakov et al.), and in important topics of fire management in wilderness areas and parks (M.E. Alexander and D.E. Dube). Here the difficulty is avoided of formulating a policy that protects facilities and visitors and at the same time insures long-term ecosystem functioning.

Although most authors attempt to provide a circumpolar dimension to their discussions, it is sometimes difficult to see which temperate area fire theories are being tested for their applicability to northern ecosystems. The excellent overview by R.W. Wein and D.A. MacLean states that in northern forest and...
tundra, fire frequency is determined more by weather conditions and ignition sources than it is in temperate areas. Other unique features of fire in circumpolar regions include peat fires, crown fires in spruce forests, and longer fire rotation periods than those in warmer and more arid climates. Some concepts and theories which recur in different chapters as a basis for discussion are paludification-nutrient release and insect-fire relationships.

The printing is very high quality and the editing excellent but the book is expensive. Author, geographic, and subject indices are lacking, even though a few references to literature published later than 1979. In comparison with other recent books the Second Annual National Resource Conference, which should appeal to a wide variety of readers. The objective of the conference was to discuss the institutional aspects of management of waters crossing provincial boundaries, as well as the encompassing aspect of water resources policy and decision-making, in the context of pressing issues of the 1980s. The topics covered reflect the diversity of interpretations the authors placed upon the theme of the conference. The papers begin with an academic presentation of goals and decision-making processes, immediately followed by a sharply contrasting revelation of the political realities surrounding decision-making by government. Subsequent papers include an entertaining discussion of a myriad of interpretations the authors placed upon the theme of the conference. The conference objective of focussing on pressing issues is not met. Part of the reason for this problem lies in the reader’s inability, on the basis of the material presented, to measure the magnitude of past and existing water resource problems in western Canada, so that the postulated opportunities for resolution of issues are without a standard by which to measure their urgency or viability. In this respect, the conference objective of focussing on pressing issues is not met. Individual biases often come to the fore, reflective of the variety of backgrounds represented by the authors. For this reason readers are cautioned to maintain objectivity throughout the book, because the issues addressed do not have a right or a wrong solution. This view is further reinforced by the observation that most of the papers offer comprehensive problem-identification but few offer constructive solutions. Exemplification of this may be found in the theme common to a number of papers — the problems inherent in planning and decision-making being undertaken by agencies with vested interests in the outcome. No new solutions are proposed.

Another shortcoming is the inability of some authors to address policy formulation and decision-making strictly in the context of water resources. The tendency is to address the problems inherent to the decision-making process in a universal context. Nonetheless, this book is recommended to water resources decision-makers, planners, and administrators, university and college professors and students, and anyone with more than a passing interest in water resources management. The reader will obtain an insight into the complexity of decision-making surrounding water resource development without being overwhelmed by tedious discussions of the technical details. The material is easy to understand and the editor has supplied refreshing contrasts of differing perspectives supplied by government administrators, academics, interested professional organizations, lawyers, politicians, and the concerned public. The papers are interesting and thought-provoking, and only in a few instances will the reader feel he has regressed into studying for a mid-term political science examination.

Charles H. Racine
Division of Environmental Studies
Johnson State College
Johnson, Vermont 05656
U.S.A.