

ECOLOGY OF THE VERMILION PASS FIRE

Chris Shank

National and Historic Parks Branch
Direction des parcs nationaux et
des lieux historiques



CANADA

SD
421.34
.C3
S52
1971
c.3

LIBRARY
WESTERN REGIONAL OFFICE
NATIONAL & HISTORIC
PARKS BRANCH
CALGARY, ALTA.

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

MINISTÈRE DES AFFAIRES INDIENNES ET DU NORD CANADIEN

W.R.O. LIBRARY



3 9955 00018704 7

ECOLOGY OF THE VERMILION PASS FIRE:
AN ANNOTATED BIBLIOGRAPHY

by

Chris C. Shank

Submitted to:

National and Historic Parks Branch, Department of
Indian Affairs and Northern Development

March 31, 1971

LIBRARY
PARKS CANADA
W.R.O.

BIBLIOTHEQUE
PARCS CANADA
B.R.O.

W.R.O. LIBRARY

TABLE OF CONTENTS

	Page
INTRODUCTION AND ACKNOWLEDGEMENTS	iii
PUBLICATION SOURCES	iv
AUTHOR INDEX	1
SUBJECT INDEX	35
CONCLUSIONS	37

INTRODUCTION AND ACKNOWLEDGEMENTS

The Vermilion Pass Fire started as a late afternoon lightning strike near Marble Canyon Campground, Kootenay National Park, on July 9, 1968. Three days later, the spectacular conflagration had burned more than 6,500 acres of scenic mountain country in both Banff and Kootenay National Parks. Shortly after the fire, park officials decided that the burnt site represented a unique opportunity to interpret the ecology of forest fires to the public and to develop a long-term, comprehensive, and inter-disciplinary study of the effect of forest fires on the ecosystem. This bibliography represents a preliminary step in the development of the study and is intended to make a start toward the compilation of all published matter relevant to the study.

The literature is, of course, staggeringly vast and widely scattered. In view of this consideration and that of the limited time available, the compiler felt it advisable to limit himself solely to those references considered to have direct bearing on the ecology of the Vermilion Pass Fire. This entailed inclusion of two major reference types: (a) those describing the organisms, geology, pedology, meteorology, ecology, and history of the area, and (b) those describing the effects of forest fires in the Rocky Mountains. Accordingly, the subject index has been organized in such a manner. Inclusions not dealing directly with the ecology of the Vermilion Pass Fire contain concepts which were considered to be relevant.

In dealing with references to the effects of forest fires, only literature containing information on direct, proximal effects of fires were included. For example, references to the effect of fire on soil pH were included while references to the effects of changes in soil pH on the micro-fauna were excluded.

The compiler would like to thank Mr. I.D. Jack, Chief Park Naturalist of Kootenay National Park, and Mr. M.J. Holroyd, Chief Park Naturalist of Banff National Park, who arranged to have the files of their respective parks available. Dr. J. Dennis helped immensely in providing direction during the compilation. Errors and omissions are attributable solely to the compiler.

PUBLICATION SOURCES

Act. For. Fenn.--Acta Forestalia Fennica

Alaska For. Res. Center--Alaska Forest Research Center

Alta., Dept. Lands and For.--Alberta, Department of Lands and Forests

Alta. Prov. Mus. and Arch.--Alberta Provincial Museum and Archives

Alta. Soc. Pet. Geol.--Alberta Society of Petroleum Geologists

Amer. Midl. Nat.--American Midland Naturalist

Anz. Schädlingk.--Anzeiger für Schädlingkunde

Applachia

Aust. For. Res.--Australian Forest Research

Aust. For.--Australian Forestry

Aust. Nat. Hist.--Australian Natural History

Bi-m. Res. Notes, Dept. For. Can.--Bi-monthly Research Notes, Department of Forestry of Canada

Bot. Rev.--Botanical Review

B.C., Dept. Lands, For., and Water Res.--British Columbia, Department of Lands, Forests, and Water Resources

B.C. Prov. Mus.--British Columbia Provincial Museum

Bryologist

Bull. Ecol. Soc. Amer.--Bulletin of the Ecological Society of America

Bull. Sch. For., Mont. St. Univ.--Bulletin of the School of Forestry, Montana State University

Bull. Yale Sch. For.--Bulletin of the Yale School of Forestry

Calgary Herald, The

Can., Dept. Agric.--Canada, Department of Agriculture

Can., Dept. For.--Canada, Department of Forestry

Can., Dept. Indian Aff. and North. Dev.--Canada, Department of Indian Affairs and Northern Development

Can., Dept. Int.--Canada, Department of Interior

Can., Dept. Trans.--Canada, Department of Transport

Can., Meteor. Br.--Canada, Meteorological Branch

Can., Ntl. and Hist. Parks Br.--Canada, National and Historic Parks Branch

Can., Ntl. Parks Res. Coll.--Canada, National Parks and Research Collection

Can., Survey and Mapping Br.--Canada, Surveys and Mapping Branch

Can., Dom. For. Serv.--Canada, Dominion Forest Service

Can. Alpine J.--Canadian Alpine Journal

Can. Field-Nat.--Canadian Field-Naturalist

Can. Inst. For.--Canadian Institute of Forestry

Can. J. Bot.--Canadian Journal of Botony

Can. J. Earth Sci.--Canadian Journal of Earth Science

Can. J. Res.--Canadian Journal of Research

Can. Geogr. J.--Canadian Geographical Journal

Center Nat. Res.--Center for Natural Resources

Circ. U.S. Dept. Agric.--Circular of the United States Department of Agriculture

Commun. Inst. For. Fenn.--Communicationes Institutum Forestalium Fenniae

Ecol. Monogr.--Ecological Monographs

Ecology

Edinburgh New Philos. J.--Edinburgh New Philosophy Journal

Evolution

FAO Plant Prot. Bull.--Food and Agricultural Organization's Plant Protein Bulletin

Fire Res. Sta., Boreham Wood--Fire Research Station, Boreham Wood
 For. Abstr.--Forestry Abstracts
 Geogr. Rev.--Geographical Review
 Geol. Surv. Can.--Geological Survey of Canada
 For. Chron.--Forestry Chronicle
 For. Manage. Pap., Ntheast. For. Exp. Sta.--Forest Management Paper,
 Northeast Forest Experiment Station
 For. Sci.--Forest Science
 Frontiers Plant Sci.--Frontiers in Plant Science
 J. Ecol.--Journal of Ecology
 J. Econ. Ent.--Journal of Economic Entomology
 J. For.--Journal of Forestry
 J. Range Manage.--Journal of Range Management
 J. Soil Sci.--Journal of Soil Science
 J. Wildlife Manage.--Journal of Wildlife Management
 Le Nat. Can.--Le Naturaliste Canadienne
 Mo. Wea. Rev.--Monthly Weather Review
 Natur und Land
 Ntl. Mus. Can.--National Museum of Canada
 Northw. Sci.--Northwest Science
 Occ. Pap. Sth. For. Exp. Sta.--Occasional Papers of the Southern Forest
 Experiment Station
 Pan-Pacif. Ent.--Pan-Pacific Entomologist
 Plant and Soil
 Proc. Amer. For. Cong.--Proceedings of the American Forestry Congress
 Proc. Mont. Acad. Sci.--Proceedings of the Montana Academy of Science
 Proc. Soil Sci. Soc. Amer.--Proceedings of the Soil Science Society of
 America

Proc. Tall Timb. Fire Ecol. Conf.--Proceedings of the Tall Timbers Fire Ecology Conference

Provancheria

Pub. Arch. Can.--Public Archives of Canada

Pulp Paper Mag. Can.--Pulp and Paper Magazine of Canada

Rept. B.C. For. Serv.--Report of the British Columbia Forest Service

Rept. For. Res. Inst., N.Z. For. Serv.--Reports of the Forest Research Institute, New Zealand Forest Service

Rept. For. Res., Glendon Hall Faculty For., Univ. Toronto--Reports on Forestry Research, Glendon Hall Faculty of Forestry, University of Toronto

Res. Bull. Mo. Agric. Exp. Sta.--Research Bulletin of the Missouri Agriculture Experiment Station

Res. Counc. Can.--Research Council of Canada

Res. Note, For. Exp. Sta. Idaho--Research Note, Forest Experiment Station of Idaho

Res. Note, Sthwest. For. Range Exp. Sta.--Research Note, Southwest Forest and Range Experiment Station

Res. Note, N.Z. For. Serv.--Research Note, New Zealand Forest Service

Res. Note U.B.C. For. Club--Research Note of The University of British Columbia Forestry Club

Res. Pap. (For. Manage. Res.), Ore. For. Res. Lab.--Research Paper (Forest Management Research), Oregon Forest Research Laboratory

Schweiz. Z. Forstw.--Schweizerische Zeitschrift für Forstwesen

Sci. Amer.--Scientific American

Soil Sci.--Soil Science

Sth. For. Notes, Sth. For Exp. Sta.--Southern Forestry Notes, Southern Forest Experiment Station

Tech. Note, For. Br. Can.--Technical Note, Forest Branch of Canada

Tech. Note, Lake St. For. Exp. Sta.--Technical Note, Lake States Forest Experiment Station

Timberman

Club Bull.--Torrey Botanical Club Bulletin

es.--Trudy Instituta Lesa

Agric. Tech. Bull.--United States Department of Agriculture
ical Bulletin

Serv., N. Rocky Mtn. Exp. Sta.--United States Forest Service,
Rocky Mountain Experiment Station

Serv. Res. Note, Pacif. Nthwest. For. Range Exp. Sta.--United
Forest Service Research Note, Pacific Northwest Forest and
Experiment Station

Serv. Res. Note, Stheast. For. Exp. Sta.--United States Forest
Service Research Note, Southeast Forest Experiment Station

Serv. Res. Pap., Intermt. For. Range Exp. Sta.--United States
Service Research Paper, Intermountain Forest and Range
Experiment Station

Serv., Rocky Mtn. For. Range Exp. Sta. Res. Note--United States
Forest Service, Rocky Mountain Forest and Range Experiment Station
Research Note

U.--The University of Alberta

U., Coll. Agric. Bull.--The University of Alberta, College of
Agriculture Bulletin

U. Ext. Dept.--The University of Alberta Extension Department

Calgary--The University of Calgary

AUTHOR INDEX

- Ackerman, R.F. The effect of various seedbed treatments in the forest on the germination and survival of White Spruce and Lodgepole Pine seedlings. Tech. Note For. Br. Can., 1957. 23 pp. 1
Burning surface organic material had an adverse effect on the regeneration of both species.
- Ahlgren, C.E. Some effects of fire on forest reproduction in north-eastern Minnesota. J. For. 57:194-200. 1958. 2
Results of a six-year study of effect on reproduction of trees in northeastern Minnesota.
- _____. Some effects of fire on reproduction and growth of vegetation in northeastern Minnesota. Ecology 41:431-435. 1960. 3
Plant succession on burned and unburned land is compared.
- _____. Some basic ecological factors in prescribed burning in north-eastern Minnesota. Tallahassee, Fla., Proc. 2nd Ann. Tall Timb. Fire Ecol. Conf., 1963. Pp. 143-149. 4
Short note on concepts, study methods and ecological findings in a long-term study in northeastern Minnesota.
- Ahlgren, I.F. and C.F. Ahlgren. Some effects of forest fires. Botan. Rev. 26:483-533. 1960. 5
Extensive review of literature and concepts of the ecology of forest fires.
- Alberta, Provincial Museum and Archives. A bibliography of natural history of Alberta. Edmonton, 1968a. 6
A bibliography of all known sources to the natural history of Alberta in a card index file which may be consulted at the Museum by arrangement.
- _____. Natural History Division-reference lists. 7
Issued at intervals by Nat. Hist. Div., Alta. Prov. Mus. and Arch. Edmonton, 1968b.
Lists referring to the natural history of various regions of the province and to individual groups and species. About 80 are completed or are in preparation.
- Alberta, Research Council of. List of publications. Edmonton, 1970. 44 pp. 8
List of bulletins, memoirs, geology reports, maps, hail study reports, information series, contribution series, etc.

- Alberta Society of Petroleum Geologists. Guidebook, Fourth Ann. 9
 Field Conf. Banff, Golden, Radium. August 26, 27, 28. Ed.
 by J. C. Scott. Calgary, Alta. Soc. Pet. Geol. 1954.
 182 pp.
 Detailed description of the geology of the southern Canadian
 Rockies.
- _____. Annotated bibliography of the geology of the sedimentary 10
 basin of Alberta and of adjacent parts of British Columbia and
 Northwest Territories, 1845-1955. Calgary, Alta. Soc. Pet.
 Geol. 1958. 499 pp.
 Extensive bibliography of all works published prior to 1955
 that deal with the geology of Canada between the Saskatchewan-
 Alberta border and the Rocky Mountain Trench.
- _____. Central Canadian Rockies and Foothills of Alberta. 16th Ann. 11
 Field Conf. Alta. Soc. Pet. Geol. Ed. by H. Hornford.
 Calgary, Alta. Soc. Pet. Geol. 1968. 167 pp.
 Description of geology of mountain and foothills between Bow
 and North Saskatchewan Rivers.
- Alberta, The University of. Soil zones of Alberta as established 12
 by Alberta soil surveys. Edmonton, Univ. Alta. Ext. Dept.,
 1946. 1 p.
 A map of the major soil zones of Alberta.
- Allan, J.A. The relation of the geology to the soils in the 13
 Rosebud and Banff sheets. Edmonton, Univ. Alta., Coll. Agric.
 Bull. No. 40, 1943. pp. 102-119.
- Anderson, H.W. Does burning increase runoff? J. For. 47:53-57. 14
 1949.
 Concludes contradictory evidence; does indeed support conten-
 tion that burning does increase runoff.
- Anderson, H.W. and H.K. Trobitz. Influence of some watershed 15
 variables on a major flood. J. For. 47:347-356. 1949.
 Effect of forest fires on some flood characteristics.
- Arend, J.L. Infiltration rates of forest soils in the Missouri 16
 Ozarks as affected by woods burning and litter removal. J. For.
 39:726-728. 1941.
 Infiltration rates in seven burned and unburned soil types.
- Armson, K.A. The effects of forest fires on the physical and 17
 chemical properties of soils in northwestern Ontario. Rept.
 For. Res., Glendon Hall Fac. For., Univ. Toronto 1968/1969.
 1969.
 Extensive survey of burned and unburned soils in N. Ontario
 with findings on soil exposure, pH, chemical properties,
 erosion and regeneration.

- Austin, R.C. and D.H. Baisinger. Some effects of burning on forest soils of western Oregon and Washington. J. For. 53:275-280. 18
1955.
Detailed study of effects of fire on soil.
- Baird, D.M. Kootenay National Park: wild mountains and great valleys. Misc. Rep. No. 9, Geol. Surv. Can. Ottawa, Queen's Printer, 1964. 19
General description of the geology of Kootenay National Park.
- _____. Banff National Park: how nature carved its splendour. Geol. 20
Surv. Can., Misc. Rep. No. 13. Ottawa, Queen's Printer, 1967.
General aspects of the geology of Banff National Park.
- Banff National Park. File 185--Fire. 1927 to present. 21
A general file on forest fires. In regard to the Vermilion Pass Fire, this file contains letters of thanks, requests to cut, refusals, proposals for studies, cost analyses, reports, notes made during the fire, receipts, etc. From 1927 to 1940 this file was called F-3, and it appears to be incomplete. Since 1970, this file has been named 5-F-1.
- _____. File 186--Wardens' fire reports. 1927 to present. 22
Fire reports and correspondence regarding them. Fire reports contain information on causes, location, size, time, method of suppression, weather conditions, costs, etc. From 1927 to 1940, these reports were included in File F-3. This file appears to be incomplete. Since 1970, this file has been named 5-F-1.2.
- _____. File 186-1--Fire reports, C.P.R. right-of-way. 1927 to 23
present.
Fire reports, correspondence, and documents pertaining to fire on C.P.R. land. From 1927 to 1940 this file was named F-3.1. Since 1970, it has been called 5-F-1.2.
- _____. File 331--Superintendent's reports. 1940 to present. 24
Reports issued annually, semi-annually, quarterly, and monthly.
A concise summary of fire activity in the park during that period is found either under the heading "Fire" or "Resource Conservation." Since 1970, this file has been named 1-S-5.
- _____. File 108-185--Vermilion Pass Fire study. 1968 to present. 25
Contains letters, memoranda, cost analyses, notes, and project plans pertaining to the Vermilion Pass Fire study.
- Banfield, A.W.F. Additions of the list of Banff National Park birds. 26
Can. Field-Nat. 67:179-180. 1953.
Addition to the list of Clarke and Cowan (1945) and Devitt (1947). List of 26 birds.

- Banfield, A.W.F. Further notes on the birds of Banff National Park, 27
 Alberta. Can. Field-Nat. 68:182. 1954.
 Additions to the lists of Clarke and Cowan (1945), Devitt
 (1947), and Banfield (1953).
- . The mammals of Banff National Park, Alberta. Ntl. Mus. Can., 28
 Bull. No. 159, Biol., Ser. No. 57. 1958.
 Summary of the mammals of Banff National Park.
- Baptie, B. Ecology of alpine soils in Snow Creek Valley, Banff 29
 National Park, Alberta. Unpubl. Master's Thesis, Calgary,
 Dept. Biol., Univ. Calgary. 1967. 135 pp.
 Shows close correlation between soil type and vegetative
 communities in the alpine zone.
- Barneby, W.H. The new far West and the old far West. London, 30
 Edward Stanford. 1889. 316 pp.
 Includes description of burned land around Banff townsite in
 the 1880's.
- Barnette, R.M. and J.B. Hester. Effect of burning upon the accumu- 31
 lation of organic matter in forest soils. Soil Sci. 29: 281-
 284. 1930.
 Comparison of soils between an area burned over annually for
 42 years and one not burned in that length of time.
- Barrows, J.S. Forest fires in the northern Rocky Mountains. U.S. 32
 For. Serv., N. Rocky Mtn. Exp. Sta. Pap. No. 28. 1951.
- Basham, J.T. The deterioration by fungi of Jack, Red, and White 33
 Pine killed by fire in Ontario. Can. J. Bot. 35:155-172.
 1957.
 Study of the nature, causes and rate of fungal deterioration
 of fire-killed Pine in Ontario.
- Beadle, C.W. Soil temperatures during forest fires and their 34
 effect on the survival of vegetation. J. Ecology 40:180-192.
 1940.
 Method for measuring soil temperature during forest fires and
 data showing temperature under various conditions. Effects
 of fire on physical properties of soil and seed germination.
- Beaton, J.D., H.B. Peterson, and N. Bauer. Some aspects of 35
 phosphate absorption by charcoal. Proc. Soil. Sci. Soc. Amer.
 25:340-346.
 Effect of charcoal formed during forest fires on availability
 of phosphate ions in the soil.
- Beder, K. Ecology of the alpine vegetation of Snow Creek Valley, 36
 Banff National Park. Unpubl. Master's Thesis, Calgary, Dept.
 of Biol., Univ. Calgary. 1967, 243 pp.

Alpine plant associations related to environmental factors. Soil characteristics are described. Two hundred eighty-five species of vascular plants, 84 bryophytes, 100 lichens are found in the study area.

- Beder, K. and R.I. Ogilvie. Additions to the lichen flora of Alberta. *Bryologist* 70:363-364. 1967. 37
Nineteen species of lichens collected in Snow Creek Valley, Banff National Park.
- Beil, C. An ecological study of the primary producer level of sub-alpine spruce-fir ecosystem of Banff and Jasper National Parks, Alberta. Unpubl. Master's Thesis, Edmonton, Dept. of Bot., Univ. Alta., 233 pp. 1966. 38
Characterizes primary producer level of spruce-fir ecosystems by description of its structural and phytosociological attributes and the relation of these to the environment.
- Bell, R. Forest fires in northern Canada. *Proc. Amer. For. Cong.* 7:50-55. 1889. 39
- Bellefievre, R. La reproduction des peuplements d'épinette noire dans les forêts du Nord-Québec. *For. Chron.* 11:323-340. 1935. 40
Indication that fire is favourable to reproduction of black spruce. English summary.
- Bentley, J.R. and R.L. Fenner. Some temperatures during burning related to postfire seedbeds on woodland range. *J. For.* 56:737-774. 1958. 41
Soil temperatures during burning of different fuel types and effects on suitability of seeding after the fire.
- Berry, S.S. Land snails from the Canadian Rockies. *Natl. Mus. Can., Bull. No. 36, Biol. Ser. No. 8.* 1922. 42
- Beveridge, A.E., D.A. Franklin, and B. Knowles. Second growth sequence after burning. *Rep. For. Res. Inst., N.Z. For. Serv.* 1968. 1969. 43
Study of how bracken invades ground in N.Z.
- Bird, C.D. A catalogue of the lichens reported from Alberta. Calgary, Dept. Biol., Univ. Calgary, 1966a. 24 pp. Mimeod. 44
- _____. A catalogue of the bryophytes reported from Alberta, Saskatchewan, and Manitoba. Calgary, Dept. Biol., Univ. Calgary, 1966b. 52 pp. Mimeod. 45
- _____. Keys to genera of the lichenized fungi of Alberta, Saskatchewan and Manitoba. Calgary, Dept. Biol., Univ. Calgary, 1967. Various pagings. Mimeod. 46

history, visitor-use data, land-use plan and future projects.
Two maps deal with land use and development.

- Canada, Department of Interior. National parks branch files created by Engineering and Water Resources Service (later Eng. and Water Res. Br. of Eng. and Architec. Div.). Deposited in Alta. Prov. Mus. and Arch., Edmonton, Prov. Arch. Acc. 69.218 and Acc. 69.354. 78

Files contain snapshots, specifications drawings and inspector's reports of projects and enterprises in the parks. Accession 69.218 has a file on the Banff-Windermere Highway (1928-1958). See Scace (1970) for a more complete description.

- ____. The Banff-Windermere Highway. Open June 30th, 1923. Ottawa, King's Printer, 1923. 79

Copies are in the Archives of the Canadian Rockies and the Glenbow Institute.

- Canada, Department of Mines and Technical Surveys. Pedogeography of Canada. Geogr. Br., Bibliog. Ser. No. 12, Rev. ed. Ottawa, Queen's Printer, 1956. 24 pp. 80

List references to the geography of Canadian soils.

- ____. Bibliography of periodical literature on Canadian geography 1930-1955. Part 5--British Columbia and western Canada in general. Geogr. Br., Bibliog. Ser. No. 22. Ottawa, Queen's Printer, 1960. 35 pp. 81

- ____. Lake Louise, 82 N/8 E, 1:50,000. Ottawa, Surveys and Mapping Br., 1959. 82

A topographic map which covers a small portion of the area of the Vermilion Pass Fire. Banff National Park has a composite map comprised of this and the two following maps with the outline of the fire drawn onto it. This is in File 185.

- ____. Mount Eisenhower, 82 O/5 W, 1:50,000. Ottawa, Survey and Mapping Br., 1959. 83

A topographic map which covers a small portion of the area of the Vermilion Pass Fire.

- ____. Mount Goodsir, 82 N/1 E, 1:50,000. Ottawa, Survey and Mapping Br., 1961. 84

A topographic map which covers the major portion of the Vermilion Pass Fire. Kootenay National Park has a Xerox copy of this map with the outline of the fire and the location of the fire study weather instrument transect drawn onto it. This is in File 186-2, Dossier 7-SI.

- Canada, Department of Transport. Temperature and precipitation tables for British Columbia. Dept. Trans., Meteor. Br., 1967. 46 pp. 85
Closest station to Vermilion Pass is Sinclair Pass.
- _____. Monthly record of meteorological observations in Canada. 86
Dept. Trans., Meteor. Br. Published monthly.
Data from 2,000 stations across Canada. Reports are available six months after the month in question.
- Canada, National Museum of-. List of publications, 1913-1965. 87
Ottawa, Ntl. Mus. Can. 1965. Unpaged.
- Canada, Public Archives of-. Union list of Manuscripts in 88
Canadian repositories. W.K. Lamb, Dir. and R.S. Gordon, ed.
Joint proj. Publ. Arch. Can. and Humanities Res. Council Can.,
Ottawa, Queen's Printer, 1968. 734 pp.
A comprehensive list of all significant manuscripts and records in Canadian archives.
- Canadian Society of Forest Engineers. Reports of research standing 89
committees, 1945. For. Chron. 22:73-82. 1946.
Note on regeneration in White Spruce type in Upper Fraser Valley, B.C. which had been either logged, burned, or both.
- Carl, G.C. The amphibians of British Columbia. B.C. Prov. Mus. 90
Handbook No. 2, 3rd ed., Victoria, 1959. 62 pp.
Life history, biology, description and distribution of British Columbia's amphibians.
- _____. The reptiles of British Columbia. B.C. Prov. Mus. Handbook 91
No. 3, 3rd ed., Victoria, 1960. 65 pp.
Key, description, life habits and distribution of the reptiles of British Columbia.
- Carl, G.C., W.A. Clemens, and C.C. Lindsay. The freshwater fishes 92
of British Columbia. B.C. Prov. Mus. Handbook No. 5, 3rd ed.,
Victoria, 1959. 192 pp.
Description, distribution and notes on the freshwater fish of British Columbia.
- Carleton, E.C. Individual forest fire report: Marble Canyon and 93
Storm Mountain. 1969. 11 pp. Typewritten.
A fire report using the format of the conventional fire report. Includes times, size, mode of suppression, cost, damages, etc. In File 185 at Banff National Park.
- _____. Title? Date? 94
A compilation of forest fire occurrences from the Banff Park records. This manuscript was unlocatable in the Park's files

- Canada, Department of Agriculture. List of publications and reports of the Department of Agriculture, Canada pertaining to forest entomology in Alberta. Calgary, Can., Dept. Agric. Sci. Serv., For. Biol. Div., For. Biol. Lab. 1959. 20 pp. Mimeod. 69
- Canada, Department of Energy, Mines and Resources. Air photos. Ntl. Air Photo Lib., Surveys and Mapping Br. Flight line 19685 #44, 45, 56, 57, 142, 143. 82N. 1966. 70
Pre-fire air photos of Vermilion Pass Fire area. Flown from 30,000 feet making the scale approximately 1 inch = 1 mile. Paired for stereoscopy.
- _____. Air photos. Air Photographic Unit, Surveys and Mapping Br., Work Order #2689, Roll #2127, Prints 100-140, Sept. 30, 1970. Post-fire air photos of Vermilion Pass Fire area. A set of photos is kept by Kootenay National Park, R.H.S. 71
- Canada, Department of Forestry. Supplement to list of publications and reports of the Department of Forestry, Canada pertaining forest pathology in Alberta. 1959-1961. Calgary, 1962. Can. Dept. For., For. Ent. and Path. Br. Mimeod. 72
Supplement to Thomas (1959).
- Canada, Department of Forestry and Rural Development. Native trees of Canada. 6th edition. Ottawa, Queen's Printer. 1966. 73
291 pp.
Description and distribution of the trees of Canada.
- _____. List of available publications. Comp. by Publs. Distrib. Unit, Info. and Tech. Serv. Div. Ottawa, Queen's Printer, June, 1968, periodically updated. 93 pp. 74
Lists entries by subject.
- Canada, Department of Indian Affairs and Northern Development. Banff National Park provisional master plan. Ntl. and Hist. Parks Br. Ottawa, Queen's Printer. 1969. 75
Booklet describing the Park, the park program, history, visitor-use data, land-use plan and proposed projects. Two maps deal with land-use and development.
- _____. Kootenay-Banff Fire board of review. February 12, 1969. Ntl. and Hist. Parks Br., 1969. 14 pp. Mimeod. 76
Proceedings of board of review for Vermilion Pass Fire. Includes chronological sequence of events, problems encountered and recommendations. Copies on file at Kootenay National Park, R.H.S. in a binder entitled "Vermilion Pass Fire: July, 1968," and in File 186 at Banff.
- _____. Kootenay National Park Provisional Master plan. Ntl. and Hist. Parks Br. Ottawa, Queen's Printer. 1970. 77
Booklet describing Kootenay National Park; its program,

- British Columbia Forest Service. Lodgepole Pine (Pinus contorta Dougl. variety latifolia Engelm.) study in the central Interior. Rept. B.C. For. Serv., 1951. 57
Pure Lodgepole stands are fire climax.
- British Columbia Forest Service. Interim Forest Cover Series. 58
Compartment 50, Region 21, Map 82 N/1 E, 8E, Ref. Map 96. 1958.
Forest cover map of area of Vermilion Pass Fire. Describes predominant species, age, height, and cover.
- Buell, M.F. and J.E. Cantlon. Effects of prescribed burning on 59
ground cover of the New Jersey Pine region. Ecology 34:520-528. 1953.
Shrub cover is reduced while herbs and mosses increase.
- Burns, P.Y. Effect of fire on forest soils in the Pine Barren 60
region of New Jersey. Bull. Yale Sch. For. No. 57. 1952.
50 pp.
- Byrne, A.R. Man and landscape change in the Banff Park area before 61
1911. Studies in Land Use Hist. and Landscape Change, Ntl. Parks Ser. No. 1, Calgary, Univ. Calgary. 1968. 173 pp.
The early effects of man on the Banff area. Very detailed and informative. Particular emphasis on fire.
- Calgary Herald, The. Park fire flares out of control. July 10, 62
1968. p. 2.
Newspaper coverage of Vermilion Pass Fire.
- ____. Crucial day in fire fight. July 11, 1968. p. 1. 63
Newspaper coverage of Vermilion Pass Fire.
- ____. "Bomber" race against time in war on Banff-area blaze. July 64
11, 1968. p. 25.
Newspaper coverage of Vermilion Pass Fire.
- ____. Showers put brakes on park forest fire. July 12, 1968. p. 1. 65
Newspaper coverage of Vermilion Pass Fire.
- ____. Tragedy in the parks. July 12, 1968. p. 4. 66
Newspaper editorial on Vermilion Pass Fire.
- ____. Wind main threat to fire fighters. July 13, 1968. p. 1. 67
Newspaper coverage of Vermilion Pass Fire.
- Canada, Department of Agriculture. Red stain of Lodgepole Pine in 68
Alberta. Can., Dept. Agric., Sci. Serv., 1952/1953. 1953.
Red stain associated with basal fire scars.

- Bird, C.D. A preliminary flora of Alberta: Sphagna and Musci II. 47
Calgary, Dept. Biol., Univ. Calgary, 1968. 116 pp. Mimeod.
- Bird, C.D. and L. Bird. Collection made in Banff National Park by 48
C. Bird and by L. Bird, 1958, 1960, 1962, 1966, 1967, and 1968.
Can., Natl. Parks Res. Coll., Natl. and Hist. Parks Br., Ottawa,
April 28, 1969. 11 pp. Typewritten.
Includes lichens, liverworts, peat mosses, and vascular plants.
- Bird, R.D. Biotic communities of the aspen parkland of central 49
Canada. Ecology 11:356-442. 1930.
Short section on effects of fire on the Canadian aspen
parklands. Refers primarily to Manitoba.
- Biswell, H.H. and A.M. Schultz. Surface runoff and erosion as 50
related to prescribed burning. J. For. 55:372-375. 1957.
Effects of prescribed burning on runoff in California
Ponderosa Pine forest.
- Blake, I.H. An ecological reconnaissance in the Medicine Bow 51
Mountains. Ecol. Monogr. 15:207-242. 1945.
Description and ecology of communities of ground-inhabiting
fauna in an area characteristic of coniferous regions.
- Bloomberg, W.J. Fire and Spruce. For. Chron. 26:157-161. 1950. 52
Fire has a positive and causative effect on the establishment
of Spruce as a climax type in Alberta.
- Boivin, B. Enumeration des plantes du Canada. First serialized in 53
Le Nat. Can., vols. 93-94, 1966-1967; reprinted as vol. 6 of
Provancheria, series of memoirs publ. by Louis-Marie-Herbarium
of Faculte d'Agri., Univ. Laval, Quebec. 404 pp. 1966-1967.
Explanatory notes in English and French. Enumerates 5712
taxa and 4139 species for Canada including special lists for
adjacent areas.
- Bostock, H.S., R. Mulligan, and R.J.W. Douglas. The Cordilleran 54
region. Chapt. 6 in Geology and economic minerals of Canada,
C.H. Stockwell, ed., Geol. Surv. Can., Economic Geol. Ser. No. 1,
Ottawa, Queen's Printer, 1957.
Technical description of geology in regional terms--history
of early geological work in the Cordillera, economic geology,
etc.
- Boydell, A.N. Bibliography of Alberta geomorphology. Calgary, 55
Dept. Geogr., Univ. Calgary, 1969. 13 pp. Mimeod.
- British Columbia, Department of Lands, Forests, and Water Resources. 56
British Columbia snow survey bulletin. Six issues per annum
between Feb. 1 and June 1. B.C., Dept. Lands, For., Water Res.
Publication of snow survey findings.

and Mr. Carleton was unavailable for comment.

- Cary, A. White Pine and fire. J. For. 34:62-65. 1936. 95
- Caverhill, P.Z. Rocky Mountain Forest Reserve. Can., Dept. Int., 96
For. Bull. No. 18. 1910.
Extent of early burns in Banff National Park.
- Clarke, C.H.D. and I. McTaggart-Cowan. Birds of Banff National 97
Park, Alberta. Can. Field-Nat. 59:83-103. 1945.
List of 65 birds.
- Clements, F.E. The life history of Lodgepole burn forests. U.S. 98
For. Serv. Bull. No. 79. 1910.
- Connaughton, C.A. Forest fires and accelerated erosion. J. For. 99
33:751-752. 1935.
- Cook, S.F. The effects of fire on a population of small rodents. 100
Ecology 40:102-108. 1959.
Population levels of several rodent species from three weeks
after the fire until 2 1/2 years after.
- Cook, D.B. and S.B. Robeson. Varying hare and forest succession. 101
Ecology 26:406-410. 1945.
Varying hares show considerable selectivity in choice of
food and may alter the course of forest succession.
- Cooper, C.F. Changes in vegetation, structure, and growth of 102
southwestern Pine forest since white settlement. Ecol. Monogr.
30:129-164. 1960.
Effects of man on the vegetation of Pine forests of the S.W.
U.S.A. Obvious parallels to the Canadian Rockies.
- _____. The ecology of fire. Sci. Amer. 204:150-160. 1961. 103
Role of natural fires in shaping grasslands and forest;
particularly the N. American coniferous forests.
- Cormack, R.G.H. Forest conservation studies in Alberta, 1944-1952. 104
Unpubl. Ms., Edmonton, Univ. Alta., 1952.
Effects of logging, fire and grazing on the vegetation and
streams at five sites in the eastern Rockies Forest Reserves.
- _____. A survey of coniferous forest succession in the eastern 105
Rockies. For. Chron. 29:218-232. 1953.
Describes two basic trends in the succession of conifers in
the eastern Rockies.
- _____. Spruce-fir climax vegetation in southwestern Alberta. For. 106
Chron. 22:346-349. 1956.
Description.

- Cormack, R.G.H. Wild flowers of Alberta. Edmonton, Queen's Printer, 1967. 415 pp. 107
- _____. Trees and shrubs of Alberta. Edmonton, Alta. Dept. Lands and For. n.d. 76 pp. 108
Includes distribution maps, sketches, and descriptions.
- Coveney, M.C. Effect of fire and windthrow on a forest area. 109
Unpubl. thesis. 1966.
Succession in N.E. U.S.A. same on windthrow areas as on burned areas but the process is slower on the latter.
Abstract from For. Abstr. 27, Rev. No. 5628.
- Cowan, I. McT. Big game of the mountain province. Can. 110
Geogr. J. 44:226-241. 1952.
- _____. Small mammals of the western mountains. Can. Geogr. J. 111
47:130-147. 1953.
- Cowan, I. McT. and C.J. Guiguet. The mammals of British Columbia. 112
British Columbia Prov. Mus. Handbook No. 11, 3rd ed. Victoria, Dept. of Rec. and Conserv., 1965. 414 pp.
Description, distribution, habitat, and pictures of British Columbia mammals.
- Crees, J. (comp.). References to scientific literature on fire. 113
Part XVII, 1966. Fire Res. Sta., Boreham Wood, Herts, 1969. 201 pp.
Bibliography with no abstracts. Not restricted to forest fires. Published at intervals by compilers.
- Crossley, D.I. The soils of the Kananaskis Forest Experiment 114
Station in the sub-alpine forest region in Alberta. Can., Dept. Indian Aff. and North. Dev., For. Br., Silvi. Serv., Res. Note No. 100. 1952.
- Cunningham, E.B. A pictorial history of the Vermilion Pass Fire, 115
Banff and Kootenay National Parks, July 1968. 1968.
Colour photos of the fire. Copy in the Administration Building, Banff National Park. Although the compiler has not seen it, it is probable that it is identical entry #191.
- Cushwa, C.T. The effects of prescribed burning on plant succession 116
in Pine stands of the Piedmont--with particular emphasis on response of game food plants. Unpubl. thesis. 1968.
Effect of burning Pine stands in S. Carolina on legume production, erosion, and deer food. Abstract from Diss. Abstr. 28B (11): 4369-4370. 1968.
- Cushwa, C.T., R.E. Martin, and R.L. Miller. The effects of fire 117
on seed germination. J. Range Manage. 21:250-254. 1968.
Dry heat ineffective in increasing germination whereas moist 1/2 moist heat increased the germination rate and total germination in some species.

- Czuhai, E. and C.T. Cushwa. A resume of prescribed burnings on the 118
Piedmont National Wildlife Refuge. U.S. For. Serv. Res. Note,
Sttheast. For. Exp. Sta. No. SE-86. 1968. 4 pp.
Effects of prescribed burning on wildlife habitat from
1940-1960.
- Daubenmire, R. Ecology of fire in grasslands. Pp. 209-266 of 119
Advances in ecological research, Vol. 5, J.B. Cragg, ed.,
London and New York, Academic Press. 1968.
Review of literature and concepts regarding the ecology of
grassland fires. Bibliography contains some references to
fire in woodlands and Pine forests.
- _____. Structure and ecology of coniferous forests of the northern 120
Rocky Mountains. Pp. 25-40 in Coniferous forests of the
northern Rocky Mountains, Center Nat. Res., ed., Missoula,
Univ. Mont. Found., 1969.
- Davis, J. Some effects of deer browsing on chamise sprouts after 121
fire. Amer. Midl. Natur. 77:234-238. 1967.
Deer browsing effects comeback of chamise after fire in
California.
- _____. Preliminary report on the physical and geological features 122
of that portion of the Rocky Mountains between latitudes 49°
and 51°30'. Geol. Surv. Can., Ann. Rept. 1885, Part B, Vol.
1. 1886. 169 pp.
References to geology and vegetation of the Banff area.
Special attention is paid to forest fires.
- _____. On the Canadian Rocky Mountains with special reference to 123
that part of the range between the forty-ninth parallel and
the headwaters of the Red Deer River. Can. Rec. Sci. 2:285-300.
1886b.
- Day, G.M. The Indian as an ecological factor in the northeastern 124
forest. Ecology 34:329-346. 1953.
Sizeable historical review showing that northeastern Indians
exerted a significant ecological influence; particularly
with fire. Concepts are probably applicable to the Rocky
Mountain situation.
- _____. The microenvironments occupied by Spruce and Fir regeneration 125
in the Rocky Mountains. Can., Dept. For., For. Res. Br. Publ.
1037. 1964.
- _____. Whitebark Pine in the Rocky Mountains of Alberta. For. 126
Chron. 43:278-284. 1967.
Whitebark Pine can compete with Lodgepole Pine on better
sites but is usually restricted to timberline scrub. Inability
to regenerate where fires are frequent may be responsible.

- Day, R.J. and P.J.B. Duffy. Regeneration after logging in the Crownsnest Forest. Can., Dept. For., For. Res. Br. Publ. 1007. 1963. 127
 Regeneration after clear-cutting.
- Deville, E. Bibliography of the Rocky Mountains and Selkirk ranges: British Columbia and Alberta. Appalachia 10:179-186. 1904. 128
 Covers period between 1847 and 1903.
- Devitt, O.E. Some recent observations on the birds of Banff National Park, Alberta. Can. Field-Nat. 61:117. 1947. 129
 Adds three species to list of Clarke and Cowan (1945).
- DeWitt, J.B. and J.V. Derby, Jr. Changes in nutritive value of browse plants following forest fires. J. Wildlife Manage. 19:65-70. 1955. 130
 Presents data on crude protein, ash, ether extract, crude fibre and N-free extract on several species on both burned and unburned sites.
- Diebold, C.H. Effect of fire and logging upon the depth of the forest floor in the Adirondack region. Proc. Soil Sci. Soc. Amer. 6:409-413. 1942. 131
 Forest fires cause severe decrease in median depth of forest floor in Spruce/Fir forests of the Adirondack region.
- Disney, H.J. de S. Bushfires and their effect on fauna and flora. Aust. Nat. Hist., Sidney 16:87-89. 1968. 132
 Most fires, except crown fires and counter-fires, do little harm to Australian bird and mammal populations.
- Dwight, T.W. Forestry conditions in the Rocky Mountains Forest Reserve. Can., Dept. For., For. Br. Bull. No. 33. 1913. 133
 Extent of early burns in Banff.
- Dyrness, C.T. and C.T. Youngberg. The effect of logging and slash burning on soil structure. Proc. Soil Sci. Soc. Amer. 21:444-447. 1957. 134
 Only severe burning caused significant deterioration of soil structure, particle size, and organic-matter content.
- Eden, T. Edaphic factors accompanying the succession after burning on Harpenden Common. J. Ecol. 12:267-286. 1924. 135
 Effects of burning on soil structure, content, and acidity in England.
- Emig, W.H. Mosses of the Rocky Mountain Parks: Banff. Bryologist 25:61-66. 1922. 136
- Ferrell, W.K. Comments on "Some effects of burning on forest soils of western Oregon and Washington." J. For. 53:918. 1955. 137
 Criticism of a paper on effects of burning on soils.

- Flack, J.A.D. Bird populations of aspen forests in western North America. Unpubl. Ph.D. thesis, Univ. Wisconsin, Madison. 1970. 138
- Flook, D.R. Range relationships of some ungulates native to Banff and Jasper National Parks, Alberta. Pp. 119-128 of *Grazing in terrestrial and marine environments*, D.J. Crisp, ed., Symp. Br. Ecol. Soc. No. 4. London, Blackwell Sci. Publ., 1964. 139
- French, J.R.J. and R.M. Keirle. Studies in fire-damage in Radiata Pine plantations. *Aust. For.* 33:175-180. 1969. 140
Data on recolonization of burned areas in Australia. One of the few papers dealing with insects.
- Fuller, W.H., S. Shannon, and P.S. Burgess. Effect of burning on certain forest soils of northern Arizona. *For. Sci.* 1:44-50. 1955. 141
Comparison of chemical, physical and microbiological effects of fires of various intensities in Ponderosa Pine forest.
- Gardner, J. Notes on avalanches, icefalls, and rockfalls in the Lake Louise district, July and August 1966. *Can. Alpine J.* 50:90-95. 1967a. 142
Mass movements in relation to mountain geomorphic processes.
- _____. Mountain temperatures. *Can. Alpine J.* 51:224-228. 1967b. 143
Data from Lake Louise area from 1920-1965.
- Garren, K.H. Effects of fire on vegetation of the southeastern United States. *Bot. Rev.* 9:617-654. 1943. 144
Review of the effect of fire on 18 major vegetation types of the S.E. U.S.A.
- Gauvin, G. Regeneration study in 1955 burn on Q.N.S. Paper Company limits (in Quebec). *Pulp Paper Mag. Can.* 65:11. 1964. 145
Observations on five plots.
- Gayle, W.B. and W.W. Gilgan. The effect of slash burning on germination and primary survival of Lodgepole Pine and Douglas Fir. *Res. Note U.B.C. For Club No. 2.* 1951. 3 pp. 146
Lowest germination in burned and unleached areas. Highest in moderately burned and leached areas. Several other combinations were also tested.
- Godfrey, W.E. The birds of Canada. *Natl. Mus. Can. Bull. No. 203.* 147
Biol. Ser. No. 73. Ottawa, Queen's Printer, 1966. 428 pp.
Coloured plates, distribution maps, description and ecology of 518 species.
- Graff, P.W. Invasion by *Marchantia polymorpha* following forest fires. *Tor. Bot. Club Bull.* 63:67-74. 1936. 148
Observations on the invasion of a burn in Montana by a liverwort.

- Gratkowski, H.J. Heat as a factor in germination of seeds of Ceonothus velutinus var. laevigatus T. and G. Unpubl. thesis. 149
1962.
Heat stimulates germination and thereby hinders conifer regeneration. Abstract from For. Abstr. Vol. 24, Rev. No. 3391.
- Gray, L.G. Long period fluctuations of some meteorological elements 150
in relation to Californian forest fire problems. Mo. Wea. Rev.
62:231-235. 1934.
Correlation between long-term weather trends and fire sequences.
- Guthrie, R.D. Fire melanism among mammals (Citellus undulatus). 151
Amer. Midl. Natur. 77:227-230. 1967.
It is suggested that melanism in arctic ground squirrels is due to selection for darker individuals in burned over areas.
- Haines, F.M. A soil survey of Hindhead Common. J. Ecol. 14:33-71. 152
1926.
An early quantitative study of the effect of fire on soil. Deals with per cent destruction of humus, concentrations of soluble salts, water content, pH, and recovery rates.
- Hare, R.C. Heat effects on living plants. Occ. Pap. Sth. For. 153
Exp. Sta. No. 183. 1961. 32 pp.
A literature review of fire-heat on the morphology and physiology of plants and the effect on soils and plant associations.
- Hardy, G.A. and W.V. Hardy. Wild flowers of the Rockies. 154
Saskatoon, H.R. Larson Publ. Co., 1949. 125 pp.
Includes colour plates and descriptions.
- Harper, R.M. Historical notes on the relations of fires to forests. 155
Proc. First Ann. Fire Ecol. Conf., Tallahassee, Fla., 1962.
p. 11-29.
Historical review of man's attitudes toward forest fires with particular reference to the S.E. U.S.A. Semi-anecdotal.
- Hart, F.C. Precipitation and runoff in relation to altitude in 156
the Rocky Mountain Region. J. For. 35:1005-1010. 1937.
- Hector, Sir J. Physical features of the central part of British 157
North America, with special reference to botanical physiognomy.
Edinburgh New Philos. J., New Ser., Vol. 17, No. II. 1861.
Contains early references to Indians as a cause of fires.
- Hendricks, B.A. and J.M. Johnson. Effects of fire on steep 158
mountain slopes in central Arizona. J. For. 42:568-571. 1944.
Report of fire in an area where 70 per cent of the slopes are over a 45 per cent grade. Heavy erosion losses.

- Heusser, C.J. Post-glacial environments in the Canadian Rocky Mountains. Ecol. Monogr. 26:288-302. 1956. 159
Presents data on climatic conditions in the Canadian Rockies prior to the coming of Europeans.
- Hnatiuk, R.J. The Pinus contorta vegetation of Banff and Jasper National Parks, Unpubl. Master's Thesis, Edmonton, Dept., Bot., Univ. Alta. 1969. 310 pp. 160
Communities were classified in terms of floristic composition, vegetation structure, and habitat. Historical development and successional status of certain sites is discussed.
- Hocking, B. Fire melanism in some African grasshoppers. Evolution 18:332-335. 1964. 161
African grasshoppers evolve darker colourings in extensively burned areas in a manner similar to industrial melanism.
- Hollingsworth, K.W. and I.D. Jack. Banff-Kootenay Fire: a proposed study in Kootenay National Park, n.d. 5 pp. Type-written. 162
Proposal for an ecological study of the Vermilion Pass Fire area. Includes outline for vegetative, meteorological, pedological, entomological, and zoological work. Located in File 186-2, Dossier 7-SI, at Kootenay National Park, R.H.S. in File 108-185 at Banff.
- Horton, K.W. Causes of variation in the stocking of Lodgepole Pine regeneration following fire. Project K-71. Can., Dept. Northern Dev. and Nat. Res., For. Br., Silvi. Leaflet. No. 95. 1953. 163
Failure of Lodgepole Pine regeneration following a fire was found to occur on excessively dry or moist sites, those with a sparse seed source and those that had been logged.
- _____. Early developments in a sub-alpine Lodgepole Pine stand of fire origin. Can., Dept. Northern Aff. and Nat. Res., For. Br., For. Res. Tech. Note No. 16. 1955. 164
- _____. The ecology of Lodgepole Pine in Alberta. Can., Dept. Northern Aff. and Nat. Res., For. Br., For. Res. Div. Tech. Note No. 45. 1956. 29 pp. 165
- _____. Characteristics of Sub-alpine Spruce in Alberta. Can., Dept. Northern Aff. and Nat. Res., For. Br., For. Res. Div. Tech. Note No. 76. 1959. 166
Taxonomy and ecology of Sub-alpine Spruce in Alberta.
- Horton, K.W. and E.J. Hopkins. Influence of fire on aspen suckering. Can. Dept. For., For. Res. Br. Publ. No. 1095. 1965. 167
Effect of heat on vigour and density of aspen suckers.

- Humphreys, F.R. and M.J. Lambert. Soil temperature profiles under slash and log fires of various intensities. *Aust. For. Res.* 1:23-29. 1965. 168
 Soil temperatures measured under burning slash piles.
 Temperatures at different depths were measured.
- Imshaug, H.A. Alpine lichens of the western United States, and adjacent Canada. I. Macrolichens. *Bryologist* 60:177-272. 1957. 169
- Isaac, L.A. Fire--a tool not a blanket rule in Douglas-Fir ecology. *Proc. 2nd Ann. Tall Timb. Fire Ecol. Conf.*, Tallahassee, Fla., 1963. p. 1-17. 170
 General description of the role of fire in the ecology and the management of Douglas-Fir.
- Isaac, L.A. and H.G. Hopkins. The forest soil of the Douglas Fir region and changes wrought upon it by logging and slash burning. *Ecology* 18:264-276. 1937. 171
 Detailed study of effect of fire on soil structure, properties, and contents.
- Jahn, E. [The effect of forest fires; particularly soil and soil fauna changes.] *Repr. from Natur und Land, Wein* 41:149-151. 1955. [German.] 172
 Study of a burn in the Stubai Mountains. A description of destruction of litter and organic humus, enrichment of soil with lime and ash, increased pH, increased erosion and loss of soil fauna.
- . [Results of investigations of the soil fauna.] *Anz. Schädlingesk.* 43:41-47. 1970. [German.] 173
 Review of recently published literature on the effects of silvicultural practices, forest fires, wind strength and the ground flora on the ground fauna.
- Jaluluddin, M. Micro-organic colonization of forest soils after burning. *Plant and Soil* 30:150-152. 1969. 174
 Describes succession of soil microorganisms for up to six months on bonfire sites in E. Anglia. Describes ground flora occurring in first two years.
- Jansson, J.R. Some effects of fire upon Douglas-Fir soils in the Big Belt Mountains. *Proc. Mont. Acad. Sci.*, 9:17-21. 1949. 175
 Burning decreases acidity, increases K and N content, and increases leaching of upper levels.
- Jemison, G.M. Effect of single fires on the diameter growth of Shortleaf Pine in the southern Appalachians. *J. For.* 41:574-576. 1943. 176
 Ground fires do not necessarily retard growth in Shortleaf Pine.

- Johnson, W.M. Natural revegetation of abandoned cropland in the Ponderosa Pine zone of the Pike's Peak region in Colorado. Ecology 26:363-374. 1945. 177
Description of stages of secondary succession in abandoned fields in Colorado.
- Karnick, C.R. Effect of fire on dry deciduous forests of Satpura Mountains, India. Trop. Ecol. Varacasi 8:110-116. 1967. 178
After burning, four forest types are described in terms of floristic composition, ash analysis, chemical content of soil, acidity, moisture content and chemical analysis of the leaves of the regrowth.
- KimmeY, J.W. Rate of deterioration of fire-killed timber in California. Cir. U.S. Dept. Agric. No. 962. 1955. 22 pp. 179
By the third year, fungi has rendered the sapwood unsalvable. Insect damage is negligible until that time.
- Klemmedson, J.O. et al. Effect of prescribed burning of forest litter on total soil nitrogen. Proc. Soil Sci. Soc. Amer. 26:200-202. 1962. 180
Burning reduced soil nitrogen.
- Knight, H.A.W. Some effects of slash-burning and clear-cutting on soil properties and initial tree growth. Unpubl. thesis. 1965. 181
Effects of logging and slash burning on soil moisture trends, soil erosion, soil chemical properties, soil microorganisms and tree growth.
- Komerek, E.V. Fire ecology. Proc. 1st Ann. Tall timb. Fire Ecol. Conf., Tallahassee, Fla., 1962. p. 95-107. 182
Superficial treatment of ecology and history of causation of forest fires.
- _____. Lightning and lightning caused fires as ecological forces. Proc. 8th Ann. Tall Timb. Fire Ecol. Conf., Tallahassee, Fla., 1968. p. 169-197. 183
Reviews entire subject of ecology of lightning-fires.
- Kootenay National Park. File 186--Fire reports, forest fires. 1925 to present. 184
Administrative file containing fire reports, requisitions, etc. Fire reports are filed for each fire occurring in the Park and contain information on causes, location, method of suppression, weather conditions, damage, etc.
- _____. File 112--Annual report. 1931 to present. 185
Under heading "fire" in each report is a concise summary of the fires occurring in the Park that year, their general characteristics and mode of suppression. The report is in two segments--from April 1 to December 31 and from January 1 to March 31. File is at Radium Hot Springs.

- Kootenay National Park. File 331--Monthly reports, Superintendent. 186
1937-1960.
Under heading "Fire" in each report is a concise summary of the fires occurring in the Park that month, their general characteristics and mode of suppression. File held at Radium Hot Springs.
- ____. File 181-1--Forest protection: infestation and fungi. 187
1944-1953.
Contains lists of insect pests sent to the Forest Insect. Lab., monographs on particular species and reports of control measures instituted in the Park. Almost entirely limited to species attacking live trees. File held at Radium Hot Springs.
- ____. File 331--Quarterly reports, Superintendent. 1961 to present. 188
Under heading "Fire" in each report is a concise summary of the fires occurring in the Park that quarter, their general characteristics and mode of suppression. File kept at Radium Hot Springs.
- ____. Marble Canyon Fire, Kootenay National Park. July 26, 1968. 189
14 pp. Mimeod.
Chronological description of Vermilion Pass Fire. Located in "Vermilion Pass Fire: July 1968" binder at Radium Hot Springs.
- ____. Plant specimen file. 1969. 17 pp. Typewritten. 190
Key to the herbarium of the KNP Interpretive Service. Kept at Radium Hot Springs.
- ____. Vermilion Pass Fire. n.d. 25 pp. Legends typewritten. 191
Book of colour prints of the Vermilion Pass Fire from July 10-20. Kept at Radium Hot Springs. Probably identical to #115.
- ____. File-186-2, Dossier 7-SI--Vermilion Fire study. n.d. 192
File containing letters, proposals, and administrative forms pertaining to the development of the Vermilion Pass Fire study. Kept at Radium Hot Springs.
- Krauch, H. Successful natural regeneration of Douglas-Fir cut-over stands is dependent on effective control of rodents. U.S. For. Serv., Res. Note, Sthwest. For. and Range Exp. Sta. No. 97. 193
1942.
In New Mexico, natural regeneration of Douglas-Fir stands requires effective control of mice.
- Kusch, D.S. An annotated checklist of common bark beetles found in Alberta with a field key to genera. Can. Dept. Agric.; For. Br., For. Res. Lab., Calgary, Info. Rept. A-X-8. 1967. 194
12 pp.

- Larsen, J.A. Fires and forest succession in the Bitterroot Mountains of northern Idaho. Ecology 10:67-76. 1929. 195
Detailed description of plant succession after fire.
- _____. Forest types of the northern Rocky Mountains and their climate controls. Ecology 11:631-672. 1930. 196
- Lawrence, W.H. Michigan beaver populations as influenced by fire and logging. Unpubl. thesis, Univ. Michigan. 1954. 197
Beaver populations are dependent on the temporary aspen type. Forest fire suppression and modern silvicultural practices are leading to rapid replacement of aspen in Michigan. Abstract from For. Abst. Vol. 16.
- Learmonth, D.J. Kootenay-Banff fire report. 1968. 32 pp. 198
Mimeod.
Detailed chronological account of Vermilion Pass Fire from both the Banff and Kootenay viewpoints. Copies located in File 186 and binder entitled "Vermilion Pass Fire: July 1968" in KNP files, Radium Hot Springs and in File 186 at Banff.
- Levno, A. and J. Rothacker. Increases in maximum stream temperatures after slash burning in a small experimental watershed. U.S. For. Serv. Res. Note, Pacif. Nthwest. For. Range Exp. Sta., No. PNW-110. 1969. 7 pp. 199
Catchment in Cascades was clear-felled and the slash was burned. As a result of direct sunlight, the mean water temperature increased.
- Lewis, F.J. Vegetation distribution in the Rocky Mountains Park. Can. Alpine J. 8:87-95. 1917. 200
- Little, S. The effects of forest fires on the stand history of New Jersey's Pine region. For. Manage. Pap., Ntheast. For. Exp. Sta. Pap. No. 2. 1946. 43 pp. 201
Account of fires damage for the past 200 years and the ecological effects of fires of varying intensities.
- Lloyd, H. Forest fire and wildlife. J. For. 36:1051-1054. 1938. 202
A rather superficial treatment of the effect of fire on wildlife populations.
- Lutz, H.J. The effects of forest fires on the vegetation of interior Alaska. Sta. Pap., Alaska For. Res. Cent. No. 1., 1953. 36 pp. 203
Treats history of forest fires in Alaska, effects of fire on different species, forest succession following fires, and the effect of fire on soils, hydrologic relations and animal populations.

- Lutz, H.J. Ecological effects of forest fires in the interior of Alaska. U.S. Dept. Agric. Tech. Bull. No. 1133, 1956. 121 pp. 204
The same as Lutz (1953).
- _____. Aboriginal man and white man as historical causes of fires in the boreal forest, with particular reference to Alaska. 205
Bull. No. 65, Yale Univ. Sch. For. New Haven, 1959. 49 pp.
Historical review of the extent to which aboriginal man and white man were the cause of fires in the boreal forests of Canada and Alaska. Concludes both aborigines and white men were very careless with fires.
- _____. Fire as an ecological factor in the boreal forest of Alaska. 206
J. For. 58:454-460. 1960.
Prevalence of fire and the effects on vegetation and soil.
- Lyon, L.J. Initial vegetal development following prescribed burning of Douglas Fir in south-central Idaho. U.S. For. Serv. Res. Pap., Intermt. For. Range Exp. Sta. No. INT-29, 1966. 17 pp. 207
Ecological significance of early plant recovery of burned Douglas Fir forest with particular reference to wildlife habitat.
- McCowan, D. From Indian trail to world highway. Can. Mag. 208
61:227-241. 1923.
Opening of Banff-Windermere Highway.
- McMinn, R.G. The vegetation of a burn near Blaney Lake, British Columbia. Ecology 32:135-140. 1951. 209
Short note characterizing the vegetation and factors that influence succession on a burn in the coastal area of B.C.
- MacArthur, J.D. A study of regeneration after fire in the Gaspé Region. Can., Dept. For., For. Res. Br. Publ. 1074, 1964. 210
Characteristics of post-fire Spruce/Fir regeneration.

- MacHattie, L.B. Relative humidity in Rocky Mountain forests of southern Alberta in summer. Can., Dept. For., For. Fire Res. Inst., Info. Rept. No. FF-X-1, 1966. 211
Study of relative humidity in valleys of Rocky Mountains and the effect on forest fires.
- Macoun, J. Catalogue of Canadian plants. Seven parts in 3 vols. 212
Montreal. 1883-1902.
Three thousand two hundred and nine species from collections of Borgeau, Dawson, Douglas, Drummond, and Macoun.
- Maissurow, D.K. The role of fire in perpetuation of virgin forests of northern Wisconsin. J. For. 39:201-207. 1941. 213
Historical aspect of fire as a natural event in "virgin" forests of Wisconsin.
- Man'ko, Ju. I. [Types of felled area in Fir/Spruce forests of N. Sikhote-Alin.] Lesn. Z., Arhangel'sk 11:168-169. 1961. 214
[Russian.]
Constructs of a scheme showing, for five main forest types, the types of herb/shrub vegetation to be expected on clear cuttings depending on whether the area is burned after cutting or not.
- Martin, J.L. Observations on the origin and early development of a plant community following a forest fire. For. Chron. 31:154-161. 1955. 215
The origin of plant species on a burned-over area in Nova Scotia was determined and the early stages of succession followed for two years.
- . An ecological survey of burned-over forest land in southwestern Nova Scotia. For. Chron. 32:313-336. 1956. 216
Detailed vegetational analysis of burns of different ages in Nova Scotia.
- Martin, R.E. A basic approach to fire injury of tree stems. Proc. 2nd Ann. Tall Timb. Fire Ecol. Conf., Tallahassee, Fla., 1963. p. 151-162. 217
Effects of fire on standing trees in terms of heat at different heights, thermal properties of stems, etc.
- Medvedeva, A.A. [Development of the herbaceous cover on burns in the dark-coniferous forests of W. Siberia.] Lesod., Moskva 3:58-65. 1969. [Russian.] 218
Phenology and phytomass of herbaceous species on burns.
- Meiklejohn, J. The effect of bush burning on the microflora of a Kenya upland soil. J. Soil Sci. 6:111-118. 1955. 219
Reduction in numbers of fungi, actinomycetes and bacteria in the soil following fire.

- Mikola, et al. The effect of slash burning on the commencement of mycorrhizal association. Act. for. fenn. 77:3. 220
 Burning kills mycorrhizal fungi at surface but enough survive deeper to re-infect superficial roots.
- Miller, H.A. Use of fire in wildlife management. Proc. 2nd Ann. Tall Timb. Fire Ecol. Conf., Tallahassee, Fla., 1963. pp. 18-30. 221
 Literature review of use of fire in management of wildlife.
- Mitchell, J.A. Mortality from fire in Jack Pine stands. Tech. Note, Lake St. For. Exp. Sta. No. 416, 1954. 222
 Tabulated figures and graph showing per cent Jack Pine killed by fire by diameter class.
- Molčanov, A.A. [Periods of usability of wind-thrown and fire-killed timber in northern Russia.] Trud. Inst. Les. 9:261-280. 1953. [Russian.] 223
 Effect of insect and fungus pests on fire- and wind-damaged Spruce and Fir.
- Morris, W.G. Effects of slash burning in overmature stands of the Douglas-Fir region. For. Sci. 16:258-270. 1970. 224
 Slash burning reduced brush cover for a few years but did not effect herbaceous cover.
- Moss, E.H. The flora of Alberta. Toronto Univ., Toronto Press, 1959. 546 pp. 225
 Manual of flowering plants, conifers, ferns and fern allies.
- Moul, E.T. and M.F. Buell. Moss cover and rainfall interception in frequently burned sites in the New Jersey Pine barrens. Torr. Bot. Club Bull. 82:155-162. 1955. 226
 Indicates that bryophyte-lichen complex that invades after a fire may absorb tremendous amounts of rainfall.
- Munro, J.A. and I. McTaggart Cowan. Preliminary report on the birds and mammals of Kootenay National Park, British Columbia. Can. Field-Nat. 58:34-51. 1944. 227
 Catalogue and notes on mammals and birds of Kootenay National Park. Some information on altered plant communities due to early burns. Includes a short history of fires in the Park.
- Muri, G. The effect of simulated slash burning on germination, primary survival and top/root ratios of Engelmann Spruce and Alpine Fir. Res. Note U.B.C. For. Club No. 14, 1955. 228
 Experimental evaluation of the effects of the degree of burning and leaching on germination, survival and morphology of seedlings.

- Murray, J.S. Rhizina inflata associated with group dying of
conifers in Britain. FAO Plant Prot. Bull. 4:6. 1955. 229
Usually saprophytic Rhizina fruits vigorously on charcoal
and infests nearby conifers.
- Neal, J.L., E. Wright, and W.B. Bollen. Burning Douglas Fir 230
slash: physical, chemical and microbial effects in the soil.
Res. Pap. (For. Mgmt. Res.) Ore. For. Res. Lab. No. 1, 1965.
32 pp.
Presents data on effects of burning at three intensities on
a) soil moisture, b) temperature, 3) pH, 4) N content, 5) C
content, 6) number of bacteria, 7) per cent of Streptomyces,
and 8) mould population.
- Nelson, J.G. Man and landscape change in Banff National Park: 231
a national park problem in perspective. Pp. 111-150 in The
Canadian national parks: today and tomorrow. J.G. Nelson and
R. Scace, eds., Calgary, Univ. Calgary, 1968.
A history of the influence of man on the landscape of Banff
National Park.
- _____. Some observations on animals, landscape and man in the Bow 232
Valley area: 1750-1885. Pp. 219-237 in Vegetation, soils
and wildlife; process and method in Canadian geography. J.G.
Nelson and M.J. Chambers, eds., Toronto, Methuen Publs., 1969.
Number and species of animals in Bow Valley in early
European period and their effect on the landscape.
- Nelson, J.G. and A.R. Byrne. Man as a instrument of landscape 233
change: fires, floods and national parks in the Bow Valley,
Alberta. Geogr. Rev. 56:226-238. 1966.
Brief summary of effects of fire and flood on the Bow Valley
since the coming of Europeans.
- North, F.K. and G.L. Henderson. Summary of the geology of the 234
southern Rocky Mountains of Canada. Pp. 15-81 in Guidebook,
4th Ann. Field Conf., J.C. Scott, ed. Calgary, Alta. Soc. Pet.
Geol., 1954.
- Ogilvie, R.T. Notes on plant distribution in the Rocky Mountains 235
of Alberta. Can. J. Bot. 40:1091-1094. 1962.
- _____. Sub-alpine forest ecology--forest habitat types of Banff 236
National Park. Field trip No. 2, 58th Ann. meet. Can. Inst.
For., 1966.
Description of climate, flora, ecology, geology, and soils
of Banff National Park.
- _____. The mountain forest and alpine zones of Alberta. Pp. 25-44 237
in Vegetation, soils and wildlife; process and method in
Canadian geography, J.G. Nelson and M.J. Chambers, eds.,
Toronto, Methuen Publs., 1969.

Describes flora, ecology, and fire history of the major forest and alpine communities in Banff.

- Ogilvie, R.T. and B. Baptie. A permafrost profile in the Rocky Mountains of Alberta. *Can. J. Earth Sci.* 4:744-745. 1967. 238
- Ogilvie, R.T. and R.C. Scace. Guide for field trip to Banff National Park, October 12 and 13, 1968. Pp. 989-1015 in *The Canadian national parks; today and tomorrow.* J.G. Nelson and R. Scace, eds., Calgary, Univ. Calgary. 1968. 239
Includes a description of the Vermilion Pass Fire.
- Paine, L.A. Butt rot defect and potential hazard in Lodgepole Pine on selected California recreational areas. U.S. For. Serv. Res. Note, Pacif. Sthwest. For. Range Exp. Sta. No. PSW-106, 1966. 7 pp. 240
Two thirds of fire-scarred trees were found to be decayed.
- Palliser, J. et al. The journals, detailed reports, and observations relative to the exploration by Captain Palliser of that portion of British North America, which in latitude, lies between the British boundary line and the height of land or watershed of Northern or Frozen Ocean respectively, and in longitude, between the western shore of Lake Superior and the Pacific Ocean during the years 1857, 1858, 1859, and 1860. Presented to both Houses of Parliament by comm. of Her Majesty, 19th May, 1863. London. G.E. Eyre and W. Spottiswoode for H.M. Stat. Off, 325 pp. 1863. 241
Early observations on the natural history of the Rocky Mountains. Byrne (1968) covers the aspects of this work that are relevant. See also Spry (1963).
- Parker, H.A. Stocking of Lodgepole Pine after a fire. *Silvic. Leafl. Dom. For. Serv. No. 12*, 1942. 242
Regeneration of Lodgepole Pine in the Kananaskis region of Alberta.
- Parmelee, F.T. Long-horned and flat-headed borers attacking fire-killed coniferous timber in Michigan. *J. Econ. Ent.* 34:377-380. 1941. 243
- Patton, D.R. and H.D. Avant. Fire stimulated aspen sprouting in a Spruce-Fire Forest in New Mexico. U.S. For. Serv., Rocky Mtn. For. Range Exp. Sta. Res. Note RM-159, 1970. 3 pp. 244
Reports how fire stimulated aspen sprouting.
- Pearse, A.S. Effects of burning-over and raking off litter on certain soil animals in the Duke Forest. *Amer. Midl. Nat.* 29:406-424. 1943. 245
Soil fauna collected and soil temperature recorded at three month intervals for five years on a burned-over plot and on a raked plot.

- Penfound, W.T. Influence of a wildfire in the Wichita Mountains Wildlife Refuge, Oklahoma. Ecology 49:1003-1006. 1968. 246
After a severe fire in 1963, differential mortality was noted in different forest types with different succession sequences expected.
- Potter, J.G. Snow cover. Can., Dept. Trans., Meteor. Br., Climatolog. Stud. No. 3. Ottawa, Queen's Printer, 1965. 247
69 pp.
Regional description of snow cover. Deals with date of first snow, date of last, days with snow depth, etc.
- Ramsey, G.S. Bibliography of departmental forest fire research literature. Can., Dept. For. and Rural Dev., For. Fire Res. Inst., Ottawa, Info. Rept. FF-X-2, 1966. 248
Strongly management oriented. See also Supplement No. 1, December 1967.
- Ramsey, T. Passing of a Rocky Mountain trail. Travel 41:22-26, 38. 1923. 249
Popular account of the last pack train along the trail that became the Banff-Windermere Highway.
- Rand, A.L. Distributional notes of Canadian birds. Can. Field-Nat. 62:175-180. 1948a. 250
- _____. Birds of southern Alberta. Ottawa, King's Printer, 1948b. 251
105 pp.
- _____. Mammals of eastern Rockies and western plains of Canada. Natl. Mus. Can., Bull. 108, Biol. Ser. No. 85, 1948c. 237 pp. 252
- Retzer, J.L. Alpine soils of the Rocky Mountains. J. Soil Sci. 7:22-32. 1956. 253
Refers to Colorado.
- Rice, L.A. The effect of fire on the prairie animal communities. Ecology 13:393-401. 1932. 254
Effects of prairie fires on faunal populations; particularly invertebrates.
- Rice, R.M. and L.R. Green. The effect of former plant cover on herbaceous vegetation after fire. J. For. 62:820-821. 1964. 255
Significant differences in initial rate of regeneration correlates with former plant cover.
- Richmond, H.A. and R.R. Lejeune. The deterioration of fire-killed White Spruce by wood-boring insects in northern Saskatchewan. For. Chron. 21:168-192. 1945. 256
Detailed study of factors affecting the attack of round-headed borers on fire-killed Spruce.

- Riney, T. and C.L. Batcheler. Relations between vertebrates and forest after the 1955 fire at Balmoral State Forest. Res. Note, N.Z. For. Serv. No. 13, 1959. 15 pp. 257
Describes effect of fire on the ecology and numbers of vertebrates in the fire area.
- Ritchie, H. Causes of floods in previous years as compared to the last few years and the effect of reforestation on stream flow as well as burning of forest, 1912-1915. Typewritten. 258
Floodwaters flowing eastward from the southern Rockies and the effects of fire on the vegetation of Banff Park.
Manuscript on file at the Canada Department of Energy, Mines and Resources, Water Resources Branch office in Calgary.
- Rowe, J.S. Forest sites--a discussion. For. Chron. 29:278-289. 1953. 259
Effects of fire on conditioning the development of plant communities.
- Rydberg, P.A. Flora of the Rocky Mountains and adjacent plains. 2nd ed. New York, Hafner Publ. Co., 1954. 1144 pp. 260
A key to the plants of the Rocky Mountains.
- Salt, W.R. and A.L. Wilk. The birds of Alberta. 2nd (rev.) ed. 261
Edmonton, Queen's Printer, 1966. 511 pp.
- Sampson, A.W. Effect of chaparral burning on soil erosion and on soil-moisture relations. Ecology 25:171-191. 1944. 262
Burning of chaparral increases erosion significantly.
- Scace, R.C. (compiler). The Banff National Park area: an annotated bibliography. Calgary, Univ. Calgary. 1970. 229 pp. 263
Mimeod.
An exhaustive bibliography of all references to the Banff area. Two thousand and ninety-eight entries. Submitted to the National and Historic Parks Branch.
- Scott, V.H. and R.H. Burgy. Effects of heat and brush burning on the physical properties of certain upland soils that influence infiltration. Soil Sci. 82:63-70. 1956. 264
Permeability studies after prescribed burns in California brush.
- Scotter, G.W. Effects of forest fires on soil properties in northern Saskatchewan. For. Chron. 39:412-421. 1963. 265
Effects of fire on soil in terms of soil temperature, water infiltration rates, erosion, exchange capacity, and acidity. These factors affect growth of preferred food plants of caribou.

- Settergren, C.D. Reanalysis of past research on effects of fire on wildland hydrology. Res. Bull. Mo. Agric. Exp. Sta. No. 954, 1969. 16 pp.
Models hydrologic response to fire through a series of multiple regression analyses. 266
- Shirley, H.L. Does light burning stimulate aspen suckers? J. For. 30:419-420. 1932. 267
- Sims, H.P. Effect of water extracts of burned Pine duff on germination of Jack Pine seed. Bi-m. Res. Notes, Dept. For. Can. 24:18-19. 1968. 268
It is suggested that deficiency of soil moisture may be responsible for poor germination on burned areas.
- Skolko, A.J. Deterioration of fire-killed pulpwood stands in eastern Canada. For. Chron. 23:128-145. 1947. 269
Study and literature review of timber deterioration after a fire.
- Skutch, A.F. Early stages of plant succession following forest fires. Ecology 10:177-190. 1929. 270
Description of early plant succession on burned land in Maine and on a 7,000-foot peak in Jamaica. Many similarities.
- Smith, J.L. and D.R. Burning destroys duff-stored seed. Sth. For. Notes, Sth. For. Exp. Sta. No. 131, 1961. 2 pp. 271
In Shortleaf Pine in Arkansas.
- Soper, J. The mammals of Alberta. Edmonton, Hamley Press Ltd., 1964. 402 pp. 272
- Spencer, D.L. and J.B. Hakala. Moose and fire on the Kenai. Proc. 3rd Ann. Tall Timb. Fire Ecol. Conf., 1964. pp. 10-33. 273
Relationship of moose populations to fire.
- Spry, I.M. The Palliser expedition. Toronto, Macmillan Co. of Canada, 1963. 310 pp. 274
Primarily a paraphrazation of Palliser et al. (1963) with additional notes. Concerned more with adventures than with critical observations.
- Stahelin, R. Factors influencing the natural restocking of high altitude burns by coniferous trees in the central Rocky Mountains. Ecology 24:19-30. 1943. 275
Natural restocking influenced by many factors; the most important are abundance of seed trees, exposure, cover and soil type.

- Steele, R.W. and W.R. Beaufait. Spring and autumn broadcast burning of interior Douglas-Fir slash. Bull. Sch. For., Mont. St. Univ. No. 36, 1969. 12 pp.
Comparison of effects on duff, soil and vegetational recovery between spring and autumn burns. 276
- Stewart, O.C. Fire as the first great force employed by man. Pp. 115-133 in Man's role in changing the face of the earth. W. Thomas, ed. Chicago, Univ. Chicago Press. 1956.
Review of literature and concepts of "primitive" man's use of fire to alter the landscape. 277
- _____. Barriers to understanding the influence of use of fire by aborigines on vegetation. Proc. 2nd Ann. Tall Timb. Fire Ecol. Conf., 1963. pp. 117-126.
Concludes that many native peoples used wildfires consciously as tools. 278
- Stickel, P.W. Forest fire damage in the Northeast. III. Relation of fire injury and fungal infection. J. For. 34:420-423. 1936. 279
- Stoddard, H.L. Relation of burning to timber and wildlife. Pp. 444-447 in The cooperative quail study association, May 1, 1931 to May 1, 1943. Misc. Publ. No. 1., Tallahassee, Fla., Tall Timb. Res. Sta., 1936.
An early statement that fire may be beneficial to wildlife and timber. Prescribes burning practices for S.E. U.S.A. 280
- Stoekeler, J.H. The growth of quaking aspen as affected by soil properties and fire. J. For. 46:727-737. 1948.
Relationships between aspen growth and soil texture, pH, intensity and frequency of burns, etc. 281
- Stovall, H.C. The Banff-Windermere-Highway. Ottawa, King's Printer, 1923. 35 pp.
The opening of the Banff Windermere Highway. 282
- Strickland, E.H. An annotated list of the Diptera (flies) of Alberta. Can. J. Res. 16 (sect. D):175-219. 1938. 283
- Swan, F.R., Jr. The effects of fire on plant communities of south-central New York State. Unpubl. thesis. 1967.
Effects of fire in three vegetation types in terms of soil characteristics and rate of regeneration. 284
- Sweeney, J.R. and H.H. Biswell. Quantitative studies of the removal of litter and duff by fire under controlled conditions. Ecology 42:572-575. 1961.
Quantitative study on per cent of duff removed by fire and degree of oxidation of duff. 285

- Tackle, D. and D.I. Crossley. Lodgepole Pine bibliography. U.S. For. Serv., Intermtn. For Range Exp. Sta., Ogden, Utah, 1953. 51 pp. 286
 Cross-indexed bibliography of important references to Lodgepole Pine prior to 1953.
- Tarrant, R.F. Effect of heat on soil colour and pH of two forest soils. Res. Note, Pacif. Nthwest. For. Range Exp. Sta. No. 90, 1953. 5 pp. 287
 Greatest change in pH at about 900°F.
- _____. Effect of slash burning on soil pH. Res. Note, Pacif. Nthwest. For. Range Exp. Sta. No. 102, 1954. 288
 Relationship of soil pH to intensity of burn, time after burning, etc.
- _____. Changes in some physical soil properties after a prescribed burn in young Ponderosa Pine. J. For. 54:439-441. 1956. 289
 Light burn slightly improved permeability.
- Tevis, L., Jr. Effect of a slash burn on forest mice. J. Wildl. Manage. 20:405-409. 1956a. 290
 Mice marked and released before slash burning. Some escaped to forest and in unburned islands. Re-invasion was very rapid.
- _____. Do forest fires destroy seed-eating rodents? Timberman 57:76-77. 1956b. 291
 Fire probably does not significantly decrease the number of mice.
- Thomas, C.H. Forest fires in Alberta with particular reference to the predominantly Lodgepole Pine forests. Unpubl. term paper (Geog. 580), Calgary, Dept. Geogr., Univ. Calgary. 1966. 40 pp. 292
- Thomas, G.B. List of publications and reports of the Department of Agriculture, Canada, pertaining to forest pathology in Alberta. Can., Dept. Agric., Sci. Div., For. Biol. Lab. Calgary, 1959. 7 pp. Mimeod. 293
 Concerned with forest diseases in Alberta and the mountain parks.
- Thomas, M.K. A bibliography of Canadian climate: 1763-1957. Can., Dept. Trans., Meteorol. Div. and Ntl. Res. Counc., Div. Build. Res., 1961. 114 pp. 294
 Extensive bibliography of published articles on Canadian climate. Cross-indexed.
- Thompson, D. David Thompson's narrative: 1784-1814. New ed. with added material, R. Glover, ed. Champlain Soc. Publ. No. 40. Toronto, The Champlain Soc., 1962. 410 pp. 295

- Thwaites, R.G. (ed.) Original journals of the Lewis and Clark Expedition, 1804-1806. New York, Antiquarian Press, 8 vols. 1959. 296
 Early observations on Indians and the natural history of the Rocky Mountains.
- Torrey, R.H. Marchantia polymorpha after forest fires. *Torreyana* 32:9-10. 1932a. 297
 Observation of a liverwort on burned area of a mountain in New Jersey.
- _____. Another report of Marchantia polymorpha after forest fires. *Torreyana* 32:128-129. 1932b. 298
 Further reports of a liverwort on mountain burns of the East.
- Trimble, G.R. and N.R. Tripp. Some effects of fire and cutting on forest soils in the Lodgepole Pine forests of the northern Rocky Mountains. *J. For.* 47:640-642. 1949. 299
 Observations on Lodgepole Pine stands and soils following fires and logging.
- Trousdell, K.B. Peak population of seed-eating rodents and shrews occurs one year after Loblolly stands are cut. *Res. Note, Stheast. For. Exp. Sta. No. 68*, 1954. 300
 A five-year trapping program showed that rodents and shrews reached a peak one to two years after felling and then decreased rapidly.
- United States Forest Service. Publications on forest fire research since 1960. Northern Forest Fire Laboratory, Missoula. U.S. Dept. Agric., For. Serv., Intermtn. For Range Exp. Sta., 1966. 8 pp. 301
 Strongly management oriented.
- Van Denburgh, J. The reptiles of western North America. Vol. 1. Lizards. San Francisco, Calif. Acad. Sci., 1922. pp. 1-611. 302
 Description, taxonomy and distribution.
- _____. The reptiles of North America. Vol. 2. Snakes and turtles. San Francisco, Calif. Acad. Sci., 1922. pp. 617-1028. 303
 Description, taxonomy and distribution.
- Viro, P.J. Prescribed burning in forestry. *Commun. Inst. For. Fenn.* 67:49. 1969. 304
 Study of the effect of prescribed burning on vegetation and humus layer with view to reforestation of Spruce and Pine.
- Vlams, J., H.H. Biswell, and A.M. Schultz. Effects of prescribed burning on soil fertility in second growth Ponderosa Pine. *J. For.* 53:905-909. 1955. 305
 Effect of burning on the ability of the soil to supply plants with nitrogen, phosphate, and potash.

- Vogl, R.J. The effects of fire on a muskeg in northern Wisconsin. 306
 J. Wildl. Manage. 28:317-329. 1964.
 Effects of prescribed burning on the vegetation of a muskeg
 were noted for three summers.
- Vogle, R.J. and C. Ryder. Effects of slash burning on conifer 307
 reproduction in Montana's Mission Range. Northw. Sci.
 43:135-147. 1969.
 Comparison of regeneration and growth rate on burned and
 unburned sites.
- Weaver, H. Fire as a continuing ecological factor in perpetuation 308
 of Ponderosa Pine (Pinus ponderosa) forest in western United
 States. Advan. Frontiers Plant Sci. 18:137-153. 1967.
 Fire was an important ecological factor in perpetuating
 natural Ponderosa Pine stands. Prescribed burning must
 replace natural burning.
- Wendelberger, G. and H. Hartl. [Studies in the area of the 309
 Aletschwald burn. I. Seed carried to the area.] Schweiz. Z.
 Forstw. 120:453-457. 1969. [German.]
 Report on part of a study on the development of soil and
 vegetation after a serious fire in 1944. Analysis of seed
 trap catches, plant sociological data, and injury by animals.
- West, N.E. An analysis of montane forest vegetation on the east 310
 flank of the central Oregon Cascades. Unpubl. thesis. 1965.
 Effect on the vegetation of the exclusion of fire for the
 past 50 years. Abstract from For. Abstr. Vol. 27, ev. No.
 3651.
- Wickman, B.E. Freshly scorched Pines attract large number of 311
Aropalus asperatus adults (Coleoptera, Cerambycidae). Pan-
 Pacif. Ent. 40:59-60. 1964.
 Insects mate and seek oviposition sites on still warm pine
 butts.
- Wilton, W.C. Black Spruce seedfall immediately following fire. 312
 For. Chron. 39:477-478. 1963.
 Viability of seed and rate of seedfall reduced.
- White, J.E. and P.G. Pearson. Small mammal populations in relation 313
 to control burning in the Pine barrens of New Jersey. Abstr.
 in Bull. Ecol. Soc. Amer. 40:79. 1959.
 No significant difference in numbers of small mammals between
 unburned plots, those burned 1/2 year before and those
 burned 2 1/2 years earlier.
- Wright, E. and R.F. Tarrant. Microbiological soil properties after 314
 logging and slash burning. Res. Note, Pacif. Northwest. For.
 Range Exp. Sta. No. 157, 1957. 5 pp.

Changes in soil reaction and microbiological properties were related to intensity of burning.

- _____. Occurrence of mycorrhizae after logging and slash burning in the Douglas Fir forest type. Res. Note, Pacif. Northwest. For. Exp. Sta. No. 160, 1958. 7 pp. Relationship of mycorrhizal root infection with time and intensity of the burn. 315
- Wyatt, F.A. et al. Soil survey of Rosebud and Banff sheets. Univ. Alberta, Coll. Agric. Bull. No. 41. Edmonton. Univ. Alta., Ext. Dept. 1943. 126 pp. 316

SUBJECT INDEX

DESCRIPTION

References specifically to the Vermilion Pass Fire or its site, 21, 25, 58, 62, 63, 64, 65, 66, 67, 70, 71, 76, 78, 79, 82, 83, 84, 93, 115, 162, 184, 189, 191, 192, 198, 208, 227, 239, 249, 282

Administration, 21, 22, 23, 24, 25, 75, 77, 78, 184, 185, 186, 187, 188, 189, 192

History (both human and natural) 21, 22, 23, 24, 30, 32, 39, 61, 78, 79, 94, 96, 122, 123, 133, 150, 184, 185, 186, 187, 188, 189, 191, 198, 208, 227, 231, 232, 233, 237, 241, 249, 258, 274, 282, 292, 295

Botany, 6, 7, 36, 37, 45, 46, 47, 48, 53, 58, 72, 73, 107, 108, 136, 154, 157, 166, 169, 187, 190, 200, 212, 225, 235, 236, 237, 260, 286

Zoology, 6, 7, 26, 27, 28, 42, 50, 69, 72, 90, 91, 92, 97, 101, 110, 111, 112, 129, 138, 147, 187, 194, 227, 232, 250, 251, 252, 261, 272, 283, 302, 303

Ecology, 6, 7, 29, 36, 38, 50, 58, 98, 101, 102, 105, 106, 120, 122, 124, 125, 126, 138, 139, 157, 160, 165, 166, 196, 200, 231, 232, 235, 236, 237, 241, 296, 310

Meteorology, 6, 7, 8, 56, 85, 86, 143, 150, 156, 196, 211, 236, 247, 294

Hydrology, 6, 7, 156, 233, 258

Pedology, 6, 7, 12, 13, 29, 36, 80, 114, 236, 238, 253, 316

Geology, 6, 7, 8, 9, 10, 11, 13, 19, 20, 54, 55, 122, 142, 234, 236

Geography, 81

EFFECTS OF FIRES

Ecology, 3, 4, 5, 33, 43, 51, 52, 57, 58, 68, 89, 95, 98, 103, 104, 109, 116, 118, 119, 121, 125, 127, 130, 131, 132, 140, 144, 145, 148, 155, 164, 170, 177, 179, 182, 183, 193, 195, 201, 202, 203, 204, 205, 206, 207, 209, 210, 213, 214, 215, 216, 218, 223, 224, 226, 227, 233, 242, 243, 246, 255, 257, 259, 269, 270, 273, 275, 276, 277, 278, 279, 280, 284, 292, 297, 298, 299, 304, 306, 307, 308, 309, 310

Pedology, 16, 17, 18, 31, 34, 35, 60, 134, 135, 137, 141, 152, 168, 171, 172, 173, 174, 175, 178, 180, 181, 219, 220, 230, 245, 262, 264, 265, 276, 281, 284, 285, 287, 288, 289, 301, 304, 305, 314, 315

Botany, 1, 2, 3, 34, 40, 41, 57, 89, 95, 104, 117, 125, 132, 146, 149, 153, 163, 167, 176, 181, 217, 222, 228, 229, 240, 244, 267, 268, 271, 279, 281, 309, 312, 315

Zoology, 100, 121, 132, 151, 161, 172, 173, 193, 197, 202, 221, 243, 245, 254, 256, 257, 273, 280, 290, 291, 300, 311, 313, 314

Hydrology, 14, 15, 16, 49, 99, 104, 159, 199, 226, 258, 262, 264, 266

BIBLIOGRAPHIES AND MAJOR REFERENCE SOURCES

5, 6, 7, 8, 10, 55, 69, 72, 74, 78, 80, 81, 87, 88, 113, 128, 221, 248, 263, 269, 286, 293, 294, 301

CONCLUSIONS

This bibliography must not be considered to be a comprehensive review of all literature bearing on a naturalistic description of the Vermilion Pass area and the ecology of forest fires in the Rocky Mountains. As indicated earlier, the amount of material available is considerable and many arbitrary decisions were made as to those references which should be included and excluded. I do feel, however, that the bibliography, as it now exists, should serve as a helpful start in the compilation of a more complete and all-encompassing work.

It is the feeling of the compiler that this bibliography should be expanded and sophisticated in the following manners:

- a) by simply searching the literature, archives, and files more thoroughly,
- b) by expanding the annotations, and
- c) by expanding the scope beyond description and fire-ecology into such areas as fire behaviour, fuel analysis, etc., and by examining the myriads of tangential subjects; for example, to use the previously cited case, the effect of changes in soil pH on the micro-fauna.