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SCHOOL OF FORESTRY  
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## SUMMARY OF MAN-CAUSED FOREST FIRES IN MONTANA: 1957 THROUGH 1965

By Robert W. Steele<sup>1</sup> and Robert C. Henderson<sup>2</sup>

Note Number 4, April 1967  
Supplement to Bulletin No. 6

This paper presents information on man-caused forest fires in Montana since 1957. Data were obtained from fire records of the same agencies included in Bulletin No. 6 of the Montana Forest and Conservation Experiment Station, published in 1957. These agencies are:

Anaconda Fire Protection Service  
Blackfoot Forest Protective Association  
Northern Montana Forestry Association  
Office of Montana State Forester  
Bureau of Indian Affairs  
Bureau of Land Management  
National Park Service  
United States Forest Service

Information on man-caused Montana forest fires in Bulletin No. 6 covered the years 1946-56. In 1962, the standard fire-classification system was changed. The new system that has been adopted by all government and private protection agencies classifies fires according to land-use activity, as shown below:

**Equipment**—Fire resulting from the operation of equipment used for construction, production, or transportation.

**Smoking**—Fires inadvertently caused by matches or burning tobacco.

**Recreation**—Fires caused by persons using areas for recreation.

**Forest and Range Utilization**—Fires caused by persons involved in timber harvest or range management.

**Land Occupancy**—Fires caused by persons using areas for either permanent or temporary residence.

**Incendiary**—Fires set by arsonists.

**Miscellaneous**—Fires that cannot properly be classified under any of the above headings, or which are unknown as to cause.

The following tables, 1 through 4, show the number of fires in relation to years, causes and agencies.

Analysis of the data included shows that the greatest concentration of man-caused fires is in the area near Anaconda, where fires resulting from recreational use and miscellaneous causes are most common. The national forests have lower concentrations of man-caused fires, since they are generally larger areas of higher elevation, where fuels are less

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Table 1. NUMBER OF MAN-CAUSED FIRES BY YEARS AND CAUSES, 1957-65

Year	NUMBER OF FIRES							Total
	Equipment	Smoking	Recreation	Forest and Range Utilization	Land Occupancy	Incendiary	Miscellaneous	
1958	15	44	56	2	46	2	40	205
1959	24	51	43	15	21	1	46	201
1960	31	83	71	35	48	3	59	330
1961	44	72	51	15	43	10	36	271
1962	22	56	42	23	54	4	22	223
1963	58	62	48	24	54	5	32	283
1964	25	71	86	36	47	9	32	306
1965	33	36	41	14	37	10	26	197
Total	266	532	488	177	377	44	332	2216
Average	30	59	54	20	42	5	37	247
Percent of Total	12	24	22	8	17	2	15	100

flammable and where human use is relatively slight.

An average of 238 man-caused fires has occurred every year on protected forestlands in Montana during the period 1946-1965. Table 5 compares the per-

cent of total fires by causes between the periods 1946-1956 and 1957-1965. (Data for the first period is contained in Bulletin No. 6 of the Montana Forest and Conservation Experiment Station.)

**Table 2. NUMBER OF MAN-CAUSED FIRES BY YEARS AND PROTECTION AGENCY, 1957-65**

Agency	NUMBER OF FIRES									
	1957	1958	1959	1960	1961	1962	1963	1964	1965	Average
State of Montana	9	9	9	8	8	17	13	6	4	9.3
Blackfoot Forest Protective Association	33	36	28	43	29	20	26	23	15	28.1
Northern Montana Forestry Association	15	22	14	14	16	16	15	12	10	14.7
Anaconda Fire Protection Service	18	20	12	26	20	10	24	10	11	16.6
Flathead Indian Reservation	16	12	10	32	33	26	34	5	10	18.7
Other Indian Reservations	20	23	42	57	48	37	65	57	48	44.1
Bureau of Land Management	4	4	7	6	4	5	6	18	5	6.5
Glacier National Park	5	7	4	4	11	6	2	0	1	4.3
Yellowstone National Park (Montana)	1	0	0	3	3	0	0	1	1	0.9
U.S. Forest Service (national forestland)	79	72	75	137	99	86	98	174	92	101.7
<b>TOTALS</b>	<b>200</b>	<b>205</b>	<b>201</b>	<b>330</b>	<b>271</b>	<b>223</b>	<b>283</b>	<b>306</b>	<b>197</b>	<b>247</b>

**Table 3. AVERAGE ANNUAL NUMBER OF MAN-CAUSED FIRES BY CAUSES AND AGENCY**

Agency	NUMBER OF FIRES								Total
	Equipment	Smoking	Recreation	Forest and Range Utilization	Land Occupancy	Incendiary	Miscellaneous		
State of Montana	1.7	2.8	1.4	0.7	1.4	0.2	1.1	9.3	
Blackfoot Forest Protective Association	5.2	6.7	6.3	1.1	4.1	0.1	4.6	28.1	
Northern Montana Forestry Association	0.8	3.2	2.5	1.2	3.6	0.0	3.4	14.7	
Anaconda Fire Protection Service	2.4	1.7	3.6	0.0	1.7	0.8	6.4	16.6	
Flathead Indian Reservation	1.8	3.3	2.8	1.4	5.2	2.4	2.8	18.7	
Other Indian Reservations	6.9	8.2	3.1	0.8	14.8	1.3	9.0	44.1	
Bureau of Land Management	0.8	1.3	0.8	0.6	1.3	0.0	1.7	6.5	
Glacier National Park	1.3	1.6	1.1	0.0	0.2	0.1	0.0	4.3	
Yellowstone National Park (Montana)	0.0	0.2	0.4	0.0	0.1	0.0	0.2	0.9	
U.S. Forest Service (national forestland)	7.3	29.6	33.6	15.1	9.8	0.9	5.4	101.7	

NOTE: Values rounded to nearest one-tenth.

**Table 4. NUMBER OF MAN-CAUSED FIRES PER MILLION PROTECTED ACRES BY CAUSES AND AGENCY**

(Total for the period 1957-1965)

Agency	NUMBER OF FIRES PER MILLION ACRES PROTECTED								Total
	Equipment	Smoking	Recreation	Forest and Range Utilization	Land Occupancy	Incendiary	Miscellaneous		
State of Montana	58.8	98.1	51.0	23.5	51.0	7.8	39.2	329.4	
Blackfoot Forest Protective Association	45.8	65.0	58.3	10.8	35.8	0.8	45.0	261.5	
Northern Montana Forestry Association	21.6	39.9	29.5	12.1	44.2	1.7	44.2	193.2	
Anaconda Fire Protection Service	65.3	69.6	147.8	0.0	73.9	34.8	260.9	652.3	
U.S. Government National Forests									
Beaverhead	0.9	8.9	16.0	2.3	0.0	0.0	0.0	28.1	
Bitterroot	1.8	23.3	17.0	10.8	0.9	1.8	0.0	55.6	
Custer	2.7	10.0	20.0	2.7	6.4	0.0	0.9	42.7	
Deerlodge	0.0	19.4	39.6	5.3	8.8	0.0	4.4	77.5	
Flathead	2.1	17.1	14.1	3.4	4.7	0.4	1.3	43.1	
Gallatin	4.7	16.5	24.7	14.1	5.3	0.0	5.3	70.6	
Helena	4.1	15.5	29.0	12.4	11.4	2.7	8.3	83.4	
Kaniksu	2.2	9.9	4.5	13.4	4.5	0.0	2.2	36.7	
Kootenai	13.0	22.1	11.9	19.3	9.1	1.7	6.2	83.3	
Lewis and Clark	2.7	10.8	9.1	4.8	2.2	0.0	1.8	31.4	
Lolo	6.2	19.7	18.7	8.3	8.3	0.0	35.6	96.8	
Flathead Indian Reservation	21.7	40.7	37.6	22.9	64.5	29.1	39.2	255.7	
Other Indian Reservations	25.9	38.3	14.6	4.0	87.8	10.6	41.9	223.1	
Bureau of Land Management	9.8	14.7	18.4	8.6	18.4	2.5	20.9	93.3	
Glacier National Park	14.5	16.9	13.1	0.0	2.4	0.1	0.0	47.0	
Yellowstone National Park	0.0	8.1	21.3	0.0	6.6	0.0	13.2	49.2	

Table 5.

PERCENT OF TOTAL FIRES BY CAUSES AND PERIOD, 1946-65

	1946-1956	1957-1965
Equipment	15	12
Smoking	33	24
Recreation	22	22
Forest and Range Utilization	5	8
Land Occupancy	11	17
Incendiary	1	2
Miscellaneous	13	15
	100	100

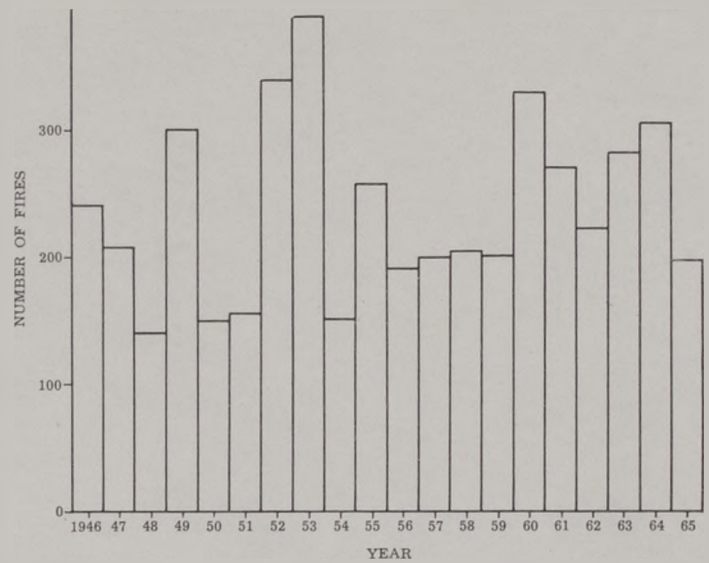
The fires occurring from 1957 through 1961 reported in this note were reclassified under the new system. Reclassifications are as follows:

Old	New
Railroad	Equipment
Smoker	Smoking
Camper	Recreation
Lumbering	Forest and Range Utilization
Debris Burning	Land Occupancy
Incendiary	Incendiary
Miscellaneous	Miscellaneous

Figure 1 shows the total number of man-caused fires by years, and represents the total of all agencies listed. There is a slight upward trend in the annual number of fires since 1946, which is to be expected because of the increased use of forested areas. Note that the increase in fires is by no means proportional to the increase in public use. The great annual variation in the number of fires reflects differences in fire danger due to weather.

FIGURE 1

NUMBER OF MAN-CAUSED FIRES ON PROTECTED LANDS IN MONTANA



Comparison of the period 1946-1956 with 1957-1965 shows that the average number of man-caused fires has increased from 230 to 247 fires per year. Fires caused by smoking have been reduced from 33 percent to 24 percent. Slight increases in the percentages of fires caused by forest and range utilization, land occupancy, incendiary, and miscellaneous causes are accounted for by increased land use.

The decrease in fires caused by careless smokers is explained by intensified forest-fire prevention campaigns, which also account for the fact that the percentage of fires caused by recreationists has remained constant, even though the percentage of people using the forests for recreation has increased tremendously.