FIRE MANAGEMENT NOTES

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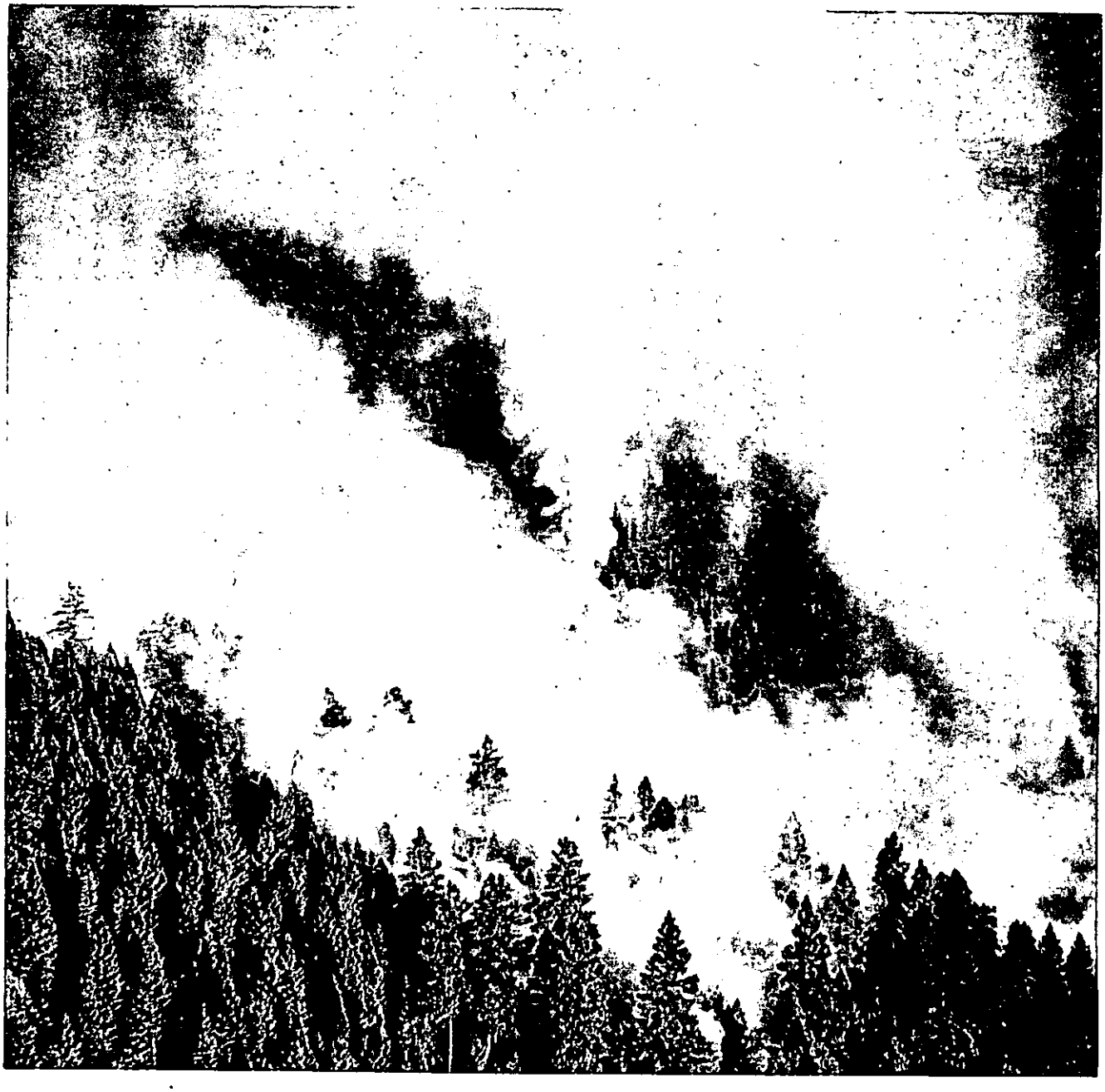


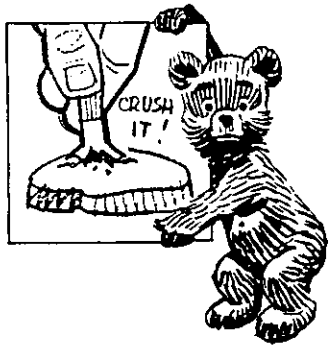
FIRE MANAGEMENT NOTES

An international quarterly periodical devoted to forest fire management

Table of Contents

The Cover

Recording of fires, such as the one shown on the cover, can be effectively done using new video tape technology. This process was effectively used in Colorado to improve fire management techniques and inform the public. Our lead story explains the process.



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Dispatch Video Unit

David Steinke

"Project fire burning out of control! Dispatch overhead team and video unit immediately."

This could be the message of the future for the USDA-Forest Service in fire suppression. Tests using recent developments in video tape have shown it to be an effective tool for use in an escaped fire situation.

Maes Creek Fire

On the Maes Creek fire in Colorado, which burned 2,340 acres in July 1978, the Pike and San Isabel National Forests newly formed video department was dispatched to the fire on the third day of burning. The objective was to document the fire suppression activities. For 4 days video tape was shot on the fireline, in helicopters, and interviewing members of the overhead team. Two additional days were spent taping various aspects of the support activities. Four days later, a 28-minute show, documenting the fire activity and suppression, was produced—complete with music, narration, and electronic lettering.

Town Threatened?

However, the truly unique part of the video tape's use on the Maes Creek fire has remained largely untold. Because of the strong winds at the fire, a large amount of smoke and ash blew into the nearby town of Rye. Rumors of the fire making a run for the town spread, and talk of evacuation was widespread.

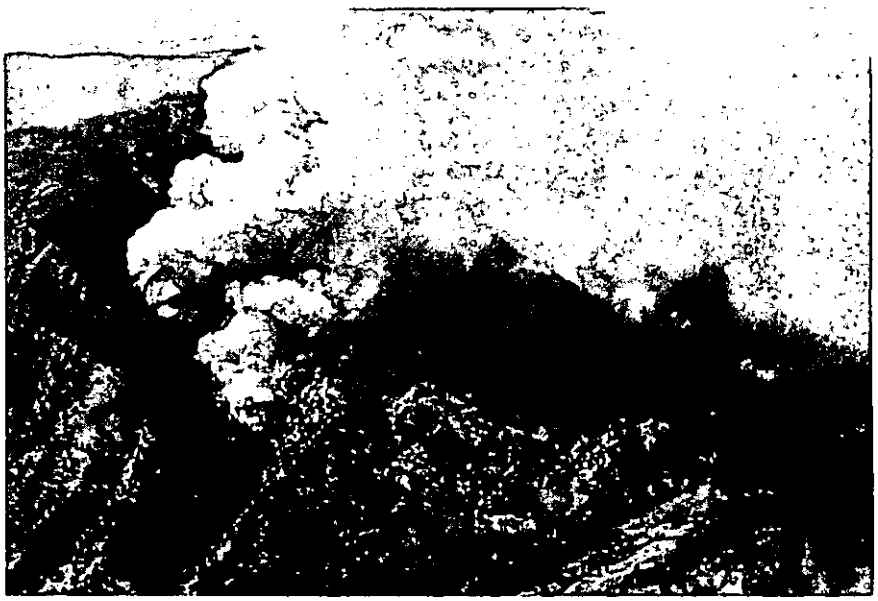
Video Tape Shown

On the fourth day of the fire, a town meeting in Rye was called for noon at the city hall. The camera was sent in a helicopter to video tape what the perimeter of the fire looked like just before noon that day, what the relationship of the fire was to the property lines of Rye, and the hotspots that were producing the large columns of smoke visible to the townspeople. A television monitor and video tape player were delivered to the town hall and the fire boss took an 8-minute helicopter ride into town with the 'just shot' video tapes.

Fears Stopped

Approximately 100 people attended. Their fears were calmed by being able to see firsthand exactly what the fire looked like and where it was in relation to their homes. In addition, the townspeople were able to talk with and question the fire boss about the suppression activities.

Continued on page 15



David Steinke is the Audio Visual production specialist for the Pike and San Isabel National Forests, Pueblo, Colorado.

A Curriculum for Forest Fire Management: An Assessment

William B. Martini

Editor's Note: *The following article consists of excerpts from a speech delivered by the author to the National Meeting of the Society of American Foresters in St. Louis, Mo., October 1978.*

It was explained to me that a fire management field trainer was wanted to serve on a panel to explain how one State (Wisconsin) trains a graduate forester who has elected to pursue a career in fire management. I was privileged to do this because I am proud of the fire management trainee program that Wisconsin has been providing for many years. This program is probably as detailed and well evaluated a beginning forester training system as exists anywhere.

I am convinced that forestry schools in general are not producing the "product" that forest fire agencies expect and need to do a *total* and efficient fire management job today.

Examine Needs

In Wisconsin the hiring of new fire managers, perhaps, can be compared to buying an auto with a lot of chrome (calculus, etc.) but which has no high gear (practical fire training). The automobile manufacturers wouldn't expect a customer to add his own high gear to a new car. On the other hand, do forestry schools expect fire agencies to complete the education of the fire managers after they are hired? I would like to encourage forestry schools to better examine the needs of the user fire agencies and adapt their curriculums to the rapidly changing complexity of the total fire management program.

Academic Void

In Wisconsin, we employ about 200 foresters who are graduates of 28 different forestry schools scattered throughout the country. Of these employees, none that I know of was ready to do a *total* fire management job without extensive further schooling. Much of the training that we are now providing could be better handled at a university. Some training will always have to be provided by the hiring agency. This we realize; but, there are academic subjects such as basic fire weather, prescribed burning, fire behavior, fuel science, fire prevention, etc., that can and should be handled at the university.

In the past, when the fire program dealt primarily with fire suppression, it was not too difficult to train a new forester to do that job. Fire management, however, if practiced totally to the degree that it should be, is far too complex to be considered an insignificant part of the overall forestry program.

I consider it vital to view fire management, properly practiced, as being worthy of placement in the general forestry curriculum as a minor (or concentration or emphasis) in at least four forestry schools in the country. Thus, a person desiring to pursue fire management as a career would still obtain a B.S. in forestry with a fire management minor. He would then be well prepared to step into a field fire manager's job without extensive agency training. He would also bring to the agency the latest in the "state-of-the-art" with a resulting improvement in the manner in which fire management is practiced in many agencies today.

Wisconsin Example

Let me explain how our trainee forestry program operates in Wisconsin. Last year, Wisconsin hired 18 foresters from eight different accredited forestry schools. We advertised these 18 positions and received 440 applications. We interviewed 65 people of the 440 and hired the 18. Needless to say, we were choosing from the best and hired some extremely talented people. Although six had masters degrees and all had ex-

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ceptional work records, none was qualified to do a *total* fire manager's job when hired.

In order to bring them up to minimum Wisconsin working standards, our State has designed and is using a classroom and field training program that takes the candidate for employment 1 full year to complete.

A forester/ranger is then placed in a position that includes a work assignment of both fire and forest management. The work mix varies from 10 to 90 percent fire and the rest forest management. The task ratio is determined by the location of the permanent work station.

The new forester is first given 6 weeks of classroom fire management instruction (8 hrs/day, 40 hrs/week, or 240 classroom hours). See figure 1 for the subjects offered and the time devoted to each.

The employee is then given 4 weeks of forest management classroom work. See figure 2.

FIRE MANAGEMENT	Hours Received at Fire School	Field Hours Required	Total Hours
Orientation to Fire Management	4	0	4
Forest Fuels	2	16	18
Management of Fire Control Station	4	26	30
Prescribed Burning	8	48	56
FIRE SUPPRESSION			
Fire Behavior	11	22	33
NFDRS (Weather)	19	18	37
Use of Hand Tools	8	28	36
Fire Safety	3	14	17
Fire Organization	3	18	21
Tactics and Techniques	5	80	85
Fire Equipment	48	58	106
Air Operations	1	7	8
Fire Reports	1	15	16
Basic Fire Simulator	24	0	24
Advanced Fire Simulator	32	0	32
Field Fire Experience	0	80	80
PRESUPPRESSION			
Detection	1	33	34
Dispatching	1	33	34
Communications	2	24	26
EFW Program	1	17	18
Maintenance	8	24	32
Fire Planning	3	13	16
PREVENTION			
Public Relations	2	14	16
Fire Law Enforcement	16	32	48
Fire Investigation	8	16	24
Fire Cause Investigation	8	16	24
Court Attendance	0	8	8
Fire Inspections	5	20	25
TOTALS	228	680	908

Figure 1.—Wisconsin's fire management training program.

ACTIVITY	HOURS
Mapping Terms and Symbols	2
Basic Cruising	6
Photo Interpretation	24
Cruising	24
Timber Marking	8
Compartment Recon	40
Timber Sales—Public Lands	8
Nursery Tour	8
Insect & Disease Control	8
Utilization & Marketing	4
Recreation	2
Forest Tax Laws	2
Bureau Programs	2
	138

Figure 2.—Forest management classroom work.

The new forester is then sent to the field and given 32 additional weeks of planned, structured exposure to all Department of Natural Resources (DNR) programs. This is given under the personal tutelage of a carefully chosen, experienced field trainer. The entire process takes 1 year, during which time the trainee forester is on probation and can be terminated for unsatisfactory performance. It is only after the year's training is completed and performance is evaluated that the trainee is offered a permanent field station. A year represents a long delay before the trainee begins to contribute *on his own* to the Wisconsin forestry program. A university fire management curriculum could reduce this time.

Program Expensive

We think Wisconsin has an excellent training program that prepares a good forester for the rigors of a fire manager's job; but, the training program is obviously expensive and time

Continued on next page

FIRE MANAGEMENT		
6 Wks Fire School = 240 Hrs × 18 × $5.61 =		$24,235
17 Wks Min. Field = 680 Hrs × 18 × $5.61 =		68,666
FOREST MANAGEMENT		
4 Wks Fom School = 160 Hrs × 18 × $5.61 =		16,156
15 Wks Min. Field = 600 Hrs × 18 × $5.61 =		60,588
		169,645
40% Fringe Benefits		67,858
		237,503
(Cost of Instructors) $5,040	One Quit	13,194
		$250,697

Figure 3.—1977 Wisconsin forest and fire management training costs.

A. Little production from trainee for one year
B. Ties up line people as intructors
C. Must keep instructors current
D. Some line employees poor field trainers
E. Top management wants goals met
F. Citizens demand program results
G. Tax revolt—finishing job of colleges
H. Line people already overloaded with duties
I. New foresters don't want added schooling
J. Robs older employees of refresher training

Figure 4.—Disadvantages of doing own training.

consuming. I think that if the forestry schools removed some of the less useful course work from their curriculum and taught more of the practical information actually needed in the field—i.e., fire management—Wisconsin and other States and agencies could spend their training funds on other courses that can't be provided in the universities.

Figure 3 shows the cost of training 18 foresters in Wisconsin in 1977. These are minimum costs, consisting mostly of salaries, and containing no costs for classroom equipment, transportation, lodging, etc.

There are other handicaps, in addition to the costs, for a State or agency doing this kind of training. Figure 4 shows these. The costs and handicaps are of deep concern to the trainers in Wisconsin as they are in other States and agencies. We are spending in excess of ¼ million dollars to do a job that should have been done by a college—a college that may also be heavily supported by the same taxpayers.

GENERAL	FIRE MANAGEMENT
1. Writing—News	1. Weather
2. Sales Psychology—Prevention	2. Fire Planning
3. Personnel Management	3. National Fire Danger Rating System
4. Business Administration	4. Fuels
5. Public Relations	5. Fire Ecology
6. Supervision	6. Suppression
7. Oral Communication	7. Fire Behavior
8. Criminal Psychology	8. Environmental Impact of Fire
9. Basic Advertising	
10. Rural Sociology	
11. Criminal Justice System	
12. Labor Relations	
13. Budget Preparation	
14. Business Law	

Figure 5.—Subject Matter Weaknesses Felt in *Field*; A Wisconsin Survey of 25 Forester/Rangers.

Survey

In preparation for this presentation, I surveyed 25 practicing field fire managers, who have degrees in forestry, and asked them what weaknesses they felt they had that could have been helped by an improved forestry curriculum. They listed the topics in a "general" category that they felt should be strengthened. They also listed courses in fire management that they didn't receive in college that would have been extremely valuable in doing a total fire management job fig. 5.

Stereo Photographs Aid Residue Management

Kevin C. Ryan and R. E. Johnson

Photographs of activity fuels increase the usefulness of fuel inventory records for fuel management planning and the evaluation of fuel treatment. This article documents the development and fire management applications of a color stereo photo series on the Shelton Ranger District, Olympic National Forest, Wash. The local photo series combines stereo photography with fuel inventory in an extensive catalog of treated and untreated residue fuelbeds. The visual reinforcement provided by the photographs is effective for communication and as a memory aid.

Past Uses

For years, fire managers have used photographs of fuel complexes as decisionmaking and training aids. The photographs were often accompanied by qualitative ratings of fuel hazard; for example, the low, medium, high, and extreme ratings given to rate of spread and resistance to control (Hornby 1936, USDA Forest Service 1968). Fireline notebooks (USDA Forest Service 1969) also use photographs to key fuel models for fire behavior prediction.

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R. E. Johnson is fuels management assistant, Shelton Ranger District, Olympic National Forest.

Evaluating Fuels

The development of the planar intercept fuel sampling theory (Brown 1971) and field inventory procedures (Brown 1974) now make it possible to measure actual fuel loadings. The National Fuel Classification and Inventory System[1] outlines a method to classify fuels using photographs and these fuel inventories. The procedure gives managers both quantitative and visual records of various fuel complexes. The system was used to develop a photographic series of the various levels of treated and untreated activity-created residues in Region 6 (Maxwell and Ward 1976a and b). The photographs are a visual record of forest residues that can be used as a training tool in fire management and for facilitating interdisciplinary discussion of residue levels and treatment objectives. The photos also can be used with supporting inventory and harvest data and fire modeling to establish treatment standards. The costs and benefits of treatment alternatives can then be evaluated to determine the best treatment method.

Applicable Use

The coastal Douglas-fir–hemlock photo series (Maxwell and Ward 1976a) includes examples of residue loadings applicable to the Olympic National Forest. Personnel on the Shelton Ranger District, however, felt additional resolution of residue loadings was desirable because of the complex mixture of mature, overmature, and second-growth timber stands on the District. The need was highest in areas of highly defective old-growth Douglas-fir because of the heavy residue loadings created by harvesting this timber from steep slopes. It was also felt that local inventories would increase the fire management staff's ability to understand and apply photographs to fuel inventory and would increase the manager's confidence in the inventories.

Procedure

Cutover units on the District are being systematically inventoried by the planar intercept sampling technique (Brown 1974). Fuels are inventoried in the 1-, 10-, 100-, and 1,000+-hour timelag fuel size classes. Fuel and duff measurements are also taken. Permanent photopoints are established so that the photographs depict a panoramic view of representative residue loadings. Color stereo paired photographs are taken from these points (fig. 1a).

Inventory data are processed and average fuel loading and depths are calculated. The variance and stand-

Continued on page

[1] *U. S. Department of Agriculture, Forest Service. 1974. National fuel classification and inventory system. Preliminary draft, 27 p. On file at U. S. Dep. Agric. For. Serv., Washington, D. C.*

STEREO
from page 7

quantification of objectives. Typical objectives are to lessen duff disturbance, reduce fine fuels as much as possible, increase the number and quality of planting spots, and reduce the negative impact on air quality. On this District, prescriptions generally call for broadcast burning because other treatments are restricted by the steep topography and heavy loadings.

Figure 1a.—Stereo pair prior to residue disposal.

ard errors in fuel measurements are recorded as an index of fuelbed variability and a measure of inventory precision. This inventory information then is used to develop residue treatment prescriptions.

Set Objectives

The inventory data help to establish objectives for treatment of units. The management needs of several disciplines are entered into the information used in prescription development and aid in developing prescriptions and setting priorities. Viewing photographs of similar units that have been treated helps in the

Establish Prescription

Complex management needs require burning prescriptions to be more finely tuned than ever before. At present, the National Fire Danger Rating System (NFDRS) (Deeming et al. 1977) is being used to develop burning prescriptions. Past experience is used to select combinations of temperature, humidity, and wind. The desired spread component, burning index, and energy release component are identified and a burning prescription established. As computer capability becomes more accessible to the fire management staff, local fuel models and fire modeling may be used.

Treatment

When burning conditions are within prescribed limits, the area is treated. The actual fuel moisture, temperature, humidity, wind direction and speeds, and NRDRS indices are recorded for subsequent use in the burn evaluation.

Figure 1b.—Stereo pair after residue disposal.

Reinventory

The units are reinventoried following treatment. Post-treatment stereo photographs are taken from the photo points (fig. 1b). The success of the burn can then be evaluated by comparing the actual and the desired conditions following treatment. This is an interdisciplinary process as was the prescription development phase, which becomes more refined and accurate with additional experience.

Valuable Data Base

This development of a stereo photo series tailored to the local situation and needs is an important element of fuels management on the Shelton Ranger District. The photos are arranged from lightest to heaviest fuel loading and then placed in an album. Together with the supporting information from burning plans and treatment evaluations, they constitute an extensive data base for planning residue treatments. Such documentation makes past experience usable and, in turn, increases future success.

The photo album allows one to compare, for example, what 50, 75, or 100 tons of fuel per acre look like. This makes discussion with personnel in other disciplines easier. As more units are inventoried and photographed, it may be possible to estimate residue loadings to sufficient accuracy by simply comparing the fuels on a unit to stereo photos from units with similar loadings. The photos also provide a visual record that will be useful in documenting the long-term breakdown and decay of untreated fuels and residual large logs that may interfere with second-growth management.

The inventory and evaluation system establishes baseline data for developing prescriptions and measuring achievement. It gives a reliable estimate of fuel consumption, which can be used to evaluate hazard reduction and site preparation. It also gives an estimate of available fuel for reporting smoke conditions to State air pollution agencies.

The stereo photos and supporting documentation are useful in planning. The actual costs of treating a unit can be used in appraising disposal costs in units projected to have similar loadings. The system also ensures that a new fuels manager will have the benefit of the previous manager's experience.

Advantages of Stereo

Stereo photos have an advantage over single-frame photos because the depth of field increases the resolution of fuel elements, making it easier to relate photographs to actual conditions. It is also easier to use the stereo photos when estimating fuel loadings on uninventoried units. Because individual fuel elements are easier to see, the user can envision the proportion of size classes in the fuel complex. This makes interpreting photographs easier, thus allowing a better estimate of fuel loading.

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Positive Effects of Prescribed Burning on Wildfire Intensities

James A. Helms

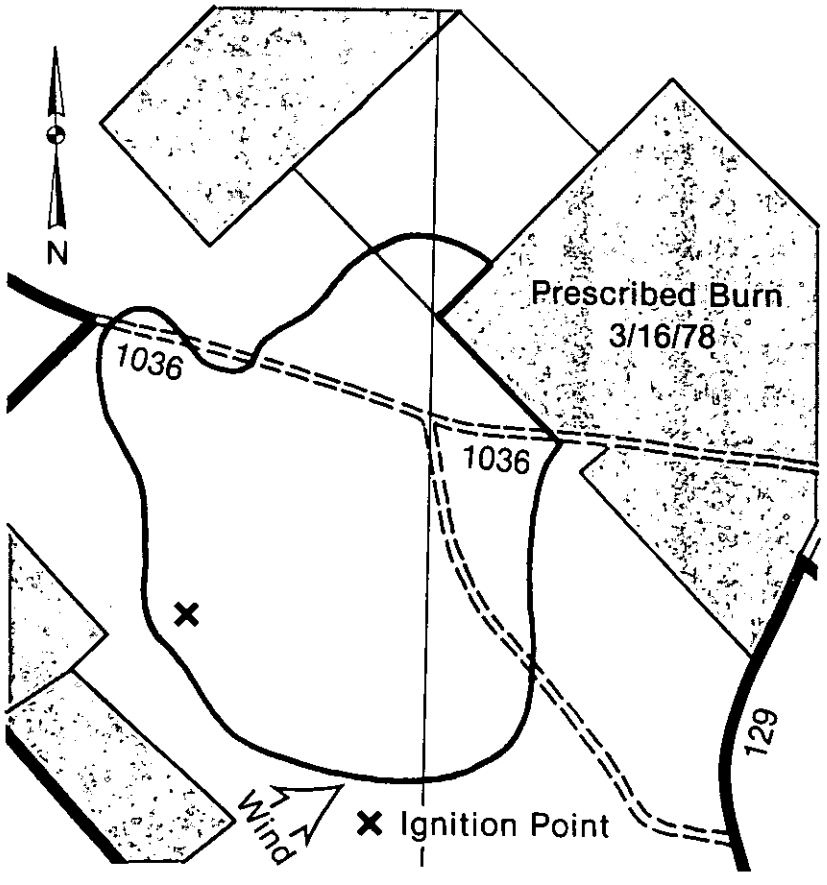
Prescribed burning has existed in the South since early habitation. Indians and settlers were burning the woods to make use of the positive aspects of fire. Today the modern forest manager still uses fire to enhance resource management. Controlled fire is used to meet management prescriptions relating to hazard reduction, site preparation, control of undesirable plant species, wildlife habitat improvement, Brown-spot Needle Blight control, and range improvement. This article documents and analyzes two case examples where the fuel reduction resulting from prescribed burning had positive results in aiding wildfire suppression.

Benefits

Documentation of the actual modification of wildfire intensity in prescribed burn areas has been neglected. Two case histories are outlined here to show how two wildfires were affected. No attempt has been made to completely analyze or justify the cost of the hazard reduction job in light of the positive effect on suppression efforts or resource damage. However, emphasis is given to the identification, location, and recognition of recent prescribed burn areas as an integral part of initial attack dispatch plans.

The Blountsville Fire

During the early morning hours of April 4, 1978, the Blountsville fire was one of a series on the Chattahoochee-Oconee National Forest in Georgia. It was set some distance from the main groups of fires and went undetected until 1145 hours. Even though initial attack was prompt, the fire had already gained



The Blountsville Fire

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momentum and required extended initial attack by all the State tractor plow units in the county plus tractor plow units from private industry, the United States Department of Agriculture Forest Service, and two State units from adjacent counties. Conditions were:

Dry bulb temperature	81°F.
Relative humidity	36 %
Fine fuel moisture	6%
Wind	West at 9 mi/h
Forward rate of spread	46 chains/hr
Perimeter increase	143 chains/hr
Byram's FLI	260 Btu linear foot
Flame length	5-6 feet
Keech's DI	196

The fire was burning in an 8-year-old loblolly pine plantation. (fig. 1). Fuels were 2 to 6 tons per acre of perennial grass and pine needles. It was spotting well ahead of the main fire. The fire burned into a 40+ year old loblolly pine stand where fuels were 6 to 8 tons per acre and jumped a 20-foot dirt road. To this point, control efforts were futile. After the fire crossed the road, it burned into an area that had been prescribed burned 19 days earlier (fig. 2). The change in fuels loading to less than 1 ton per acre caused an immediate reduction in intensity and rate of spread. The fire was quickly contained and attention turned to control lines around the flanks and rear.

Figure 1.—Blountsville fire fuel type.

Figure 2.—Fuels 19 days after prescribed burn.

Suppression action started at 1220 hours and the fire was controlled at 1700 hours the same day. Conjecture is that had the prescribed burn area not been there, the fire would have advanced another 60 to 80 chains and increased another 300 acres in size before burning conditions moderated enough to slow it down.

The fuel reduction was enough to break up the head of the fire, reduce the intensity, and allow containment success.

The Woodpecker Fire

The Woodpecker fire occurred on April 2, 1978, on the Biloxi Ranger District, DeSoto National Forest in Mississippi. This was a 346 acre fire that burned in the area that was prescribed burned in January 1976. The fire burned hot and moved fast, but damage was light, even on 95 acres of pine plantation.

This fire was started by an incendiarist on National Forest land. It was set in at least seven different places. District forces were committed on other fires and the reassignment of attack forces caused a 25-minute delay in initial attack. This allowed the fire to gain momentum that carried it to Class E (300-999 acres) size. Initial attack was with two tractor plow units. Followup was with another tractor plow unit and 22 people.

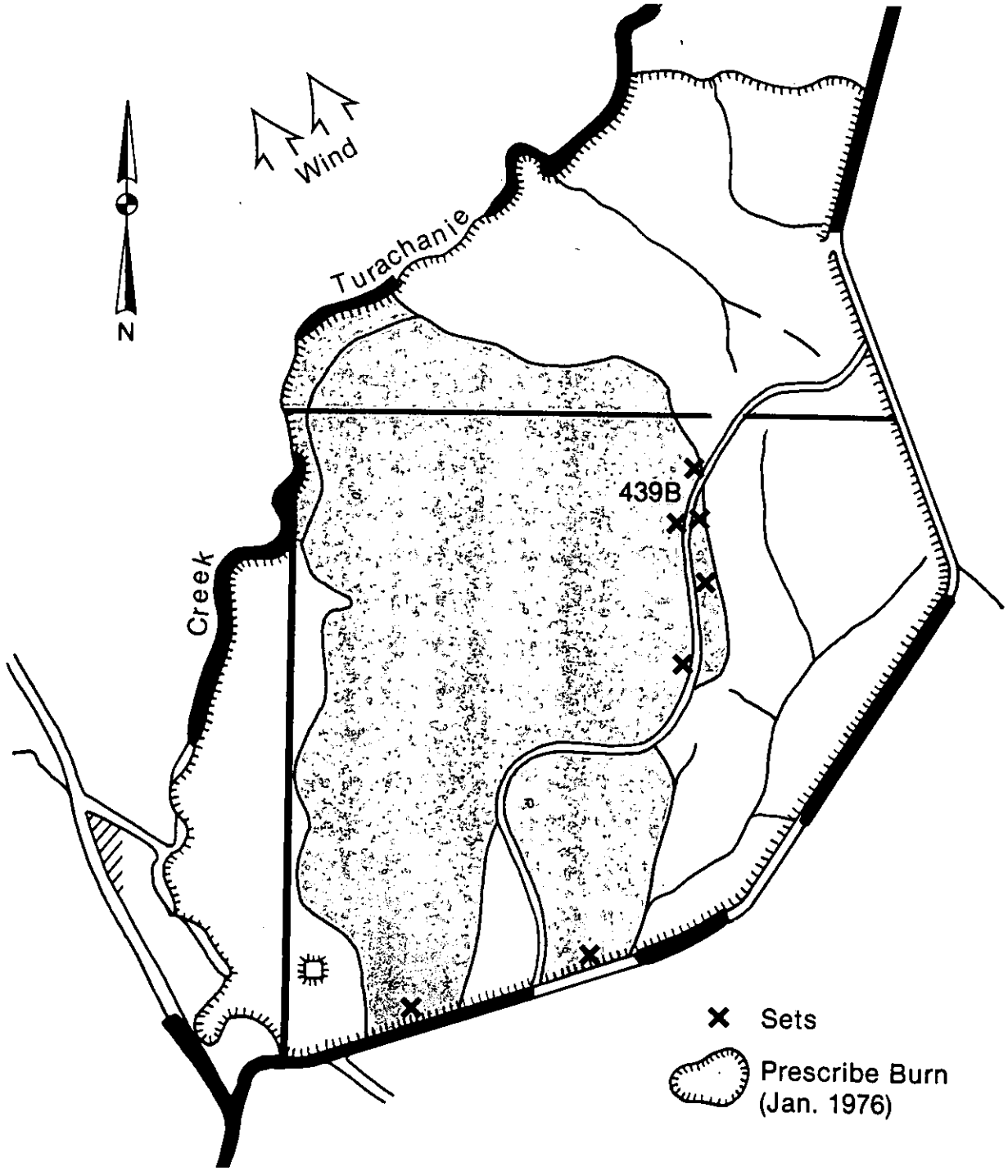
The fire had a forward rate of spread of 30 chains per hour. Flame length averaged 5 feet. Wind gusts up to 12 miles per hour caused short periods of spread and intensity above this. Average intensity was computed at 210 Btu's per linear foot (Byram's fireline intensity). Because of the 1976 prescribed fire treatment, fuels consisted almost exclusively of pine needles and grass litter (fig. 3). The intensity level of 210 Btu's was of very short duration, which reduced the damage potential considerably. Spotting did occur, but the flaming brands were light and didn't persist long enough to cause long distance spotting. Conditions were favorable for long distance spotting had heavier

Continued on next page

POSITIVE EFFECTS
from page 11

fire brands been available. Again, these favorable factors were the result of the fuel reduction effected by prescribed burning.

These factors made it possible for suppression forces to use both constructed and natural barriers for control lines. Strategy was developed



The Woodpecker Fire

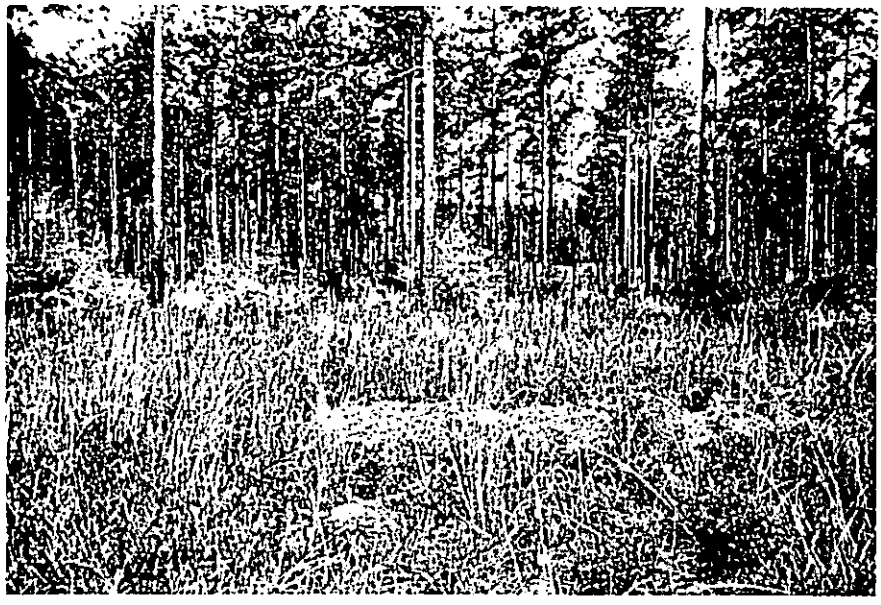


Figure 3.—Woodpecker fire fuel type.

with the knowledge that the area had been burned by prescription 2 years earlier. Had the fuel not been reduced or altered by prescribed fire, the creek shown on the north end (head) of the fire would not have been sufficient for a control line. Spotting would have carried the fire over the creek. Control from that point on would have been very difficult.

Knowing the fuel condition and the fire behavior probabilities allowed the Fire Boss to determine early in the effort that his current forces would be sufficient. This was very important since the District and its neighbors were still experiencing new fire starts. This decision freed other District and co-op forces to attack and control the new fires in a timely manner.

Figure 4.—Unburned 8- to 10-year loblolly fuels.

Positive Effects

These two cases document some positive effects of the hazard reduction of prescribed fire. These factors can:

- Reduce fire intensity.
- Reduce resistance to control.
- Reduce heat persistence and corresponding damage potential.
- Reduce suppression forces needed for containment. Enhance use of natural barriers.
- Reduce mopup and patrol time.
- Give Fire Bosses an easily identifiable, positive factor in formulating strategy and deploying forces.
- Increase production rates of line building equipment.

These positive effects are significant factors in cost-benefit analysis when planning and budgeting a prescribed burning program. The results should be carefully documented and made available for dispatcher use in initial fire attack planning.

Summary

In summary, the positive effects of hazard reduction by prescribed fire have been expressed frequently. These benefits now need to be documented and compared with actual effects on wildfire.

Citizen Band in the Forest

Vern Gray

Two years ago, officials of the Wenatchee National Forest in Washington saw that large numbers of visitors to the forest were outfitted with citizen band radios. They decided to conduct an experiment to test the effectiveness of citizen band (CB) radios as a tool for fire detection. A budget of $1,000.00 was given to the Naches Ranger District to purchase 10 CB radios for installation in District prevention and suppression vehicles. These vehicles were selected because they are the ones most often in the field and within CB range of visitors to the forest.

Signing

Signs were then developed to let the public know how and where to report a fire. The signs simply read "REPORT FIRE CB CHANNEL 9," and contained a Forest Service emblem in the middle (see fig. 1). The signs were installed on the road at each boundary of the District.

CB's Installed

After the signs were installed, District prevention personnel were instructed in the proper use of the CB radios installed in their vehicles. They were then told to monitor channel 9 at all times. The only exception to this rule was when they were traveling on a single lane road heavily used by logging traffic. In this one situation they would switch to the frequency monitored by logging traffic until they were through the area.

Dual Monitoring

Since the District's radios were purchased, the CB industry has developed a radio that permits the user to monitor channel 9 continuously, while simultaneously monitoring one other channel. Any one other channel could be selected for use in conjunction with channel 9. This would permit the listener to stay tuned to channel 9 for emergency messages, while listening at the same time to traffic on the road being traveled. If this CB radio fire detection system were to be adopted on a broader basis, the flexibility of the new type of radio would greatly increase the radio's effectiveness as a fire detection tool.

Visitors Enthused

How effective has the system been? Visitors have been enthusiastic

Figure 1.—Sign notifying public to report fires on CB Channel 9.

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supporters of the program, and seem to enjoy personally assisting the Forest Service in preventing the spread of forest fires. Often, the reporting individual will take suppression action on the fire or will stand by to give any further directions needed until District personnel arrive.

Cost-Effectiveness

In terms of cost-effectiveness, 22 percent of the District's human-caused fires over the 2-year trial period were reported by CB radio. This compares to a 7 percent detection rate for fire lookouts and a 5 percent detection rate for aerial patrols. The high percentage of first discoveries gives an excellent cost-benefit ratio when comparing a $1,000 investment, good for 5 years, with an annual cost of $3,000 to $5,000 for fire lookouts. Cost comparison with aerial detection methods are somewhat difficult because aerial detection is generally done on a forest or zone basis, and costs can vary greatly. It should also be noted that fire lookouts and aerial patrols picked up a much higher percentage of lightning-caused fires than did individuals with CB radios.

Future

It is doubtful that CB radios will ever entirely replace fire lookouts as a tool for detecting forest fires, but they may prove to be an excellent tool for reducing the manning season and daily manning hours for lookouts in some instances.

VIDEO UNIT
from page 3

Equipment

The Pike and San Isabel National Forests are the first in Region 2 to purchase video systems with color capability. The Forests also have complete in-house editing and production facilities. The video system consists of a Sony SXC-1610 color camera coupled with a Sony VO-3800 portable recorder. Editing is done with two 2850 VTR recorders, an RM-400 editor, and two color monitors.

Other Uses

Eight shows have been produced, including shows on mountain trail construction, the Young Adult Conservation Corps, prescribed burning in ponderosa pine, and a tape used for public involvement in conjunction with the Land Management Plan for the Forests. Tapes on Forest Service careers and auto safety are being planned.

Future Uses

The most recent proposed use of the video-tape system will be on major project fires. A video team of two—a cameraman and a fire observer—will be dispatched to the fire. Just prior to the morning and evening briefings, the camera will fly the fire to look at the fire perimeter, hot spots, escape routes, and division and sector assignments. The tape will then be shown to the overhead team and fire personnel on a large television monitor at the fire camp—with a time lag of only approximately 10 minutes, depending on flight time and size of the fire. The video product then will be used to aid mapping, intelligence, and, later on, as a simulation training tape for students of fire behavior.

Because of the durability, low cost, and high mobility of a video tape system, its use by the Forest Service seems assured. The possibilities are numerous and the capabilities are just beginning to be tapped.

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