Fire Management today

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Six Decades of Service

United States Department of Agriculture
Forest Service

Editor's note: On the eve of the 21st century, *Fire Management Notes* has changed its name to *Fire Management Today*, partly in response to many comments by readers over the years.

In 1936, when the journal was founded, its simple format and short, newsy articles suited its original name—*Fire Control Notes*. The journal changed its name to *Fire Management* in 1973 and then to *Fire Management Notes* in 1976 (see the story by Hutch Brown beginning on page 8). Since the 1960's, the journal has steadily grown in size and improved in design (see the story by Delvin Bunton beginning on page 27). Today, the journal's polished format and relatively extensive articles have rendered *Notes* in the name obsolete.

The journal remains committed to many of its original goals, outlined in the very first issue of *Fire Control Notes* by Roy Headley, former head of the USDA Forest Service's Division of Fire Control (see his article reprinted on page 6). One prominent goal is to help wildland fire professionals stay abreast of the latest developments in wildland fire management. That's why the journal's new name is *Fire Management Today*. Thanks go to Steve Barrett, a contributor to the journal and a consulting fire ecologist in Kalispell, MT, for suggesting the new name.

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Fire Management Today is available on the World Wide Web at <http://www.fs.fed.us/fire/planning/firenote.htm>.

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On the Cover:

Founded in 1936, Fire Management Today *has served the wildland fire community for more than 60 years as a clearinghouse for new techniques, technologies, and ideas. Until 1961, the journal kept the same simple design under its original name,* Fire Control Notes. *In 1962,* Fire Control Notes *began to modernize its design. Changes in wildland fire management policy in the 1970's led the journal to adopt a new name. A new design and larger format in the 1980's improved readability. After Smokey Bear's 50th-anniversary issue,* Fire Management Today *assumed its current polished, full-color appearance.*

The FIRE 21 symbol (shown below and on the cover) stands for the safe and effective use of wildland fire, now and in the 21st century. Its shape represents the fire triangle (oxygen, heat, and fuel). The three outer red triangles represent the basic functions of wildland fire organizations (planning, operations, and aviation management), and the three critical aspects of wildland fire management (prevention, suppression, and prescription). The black interior represents land affected by fire; the emerging green points symbolize the growth, restoration, and sustainability associated with fire-adapted ecosystems. The flame represents fire itself as an ever-present force in nature. For more information on FIRE 21 and the science, research, and innovative thinking behind it, contact Mike Apicello, National Interagency Fire Center, 208-387-5460.

Firefighter and public safety is our first priority.

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Fire Management Today: A Continuing Legacy of Service

Mike Dombeck

For more than 60 years, *Fire Management Today* has provided a forum open to anyone with anything useful or interesting to share with other wildland fire professionals. In the process, the journal has not only facilitated information exchange, but also helped build a common history and culture in the wildland fire community. On the eve of the 21st century, it's time to acknowledge—and reconfirm—the value of that service.

In 1936, when *Fire Management Today* was founded as *Fire Control Notes*, the fire organization in the United States was just 30 years old. Shaped by the experience of the Great 1910 Burn, the USDA Forest Service's Division of Fire Control was dedicated to systematic, universal wildland fire suppression. As a clearinghouse for new ideas and technologies, *Fire Control Notes* played a key role in discussions on every aspect of wildland fire management, from policy through techniques to organization and equipment. Glancing through old issues, you can trace the development of the one-lick method, the 40-man crew, helicopter use, incident management, fire behavior research, interagency collaboration, the Cooperative Forest Fire Prevention Campaign, and many other aspects of wildland fire management that we take for granted today.

Mike Dombeck is the Chief of the USDA Forest Service, Washington, DC.

Mike Dombeck, Chief of the USDA Forest Service. Photo: Karl Perry, USDA Forest Service, Washington Office, Washington, DC, 1999.

Unfortunately, we got so good at suppressing wildland fires that we overlooked the impact our efforts were having on the resources we were trying to protect. Especially in the West, decades of fire suppression left forest stands highly susceptible to insect and disease infestation. Where low-intensity fires once burned at regular intervals, people built homes and fuels accumulated, an increasingly volatile combination. Today, 40 million acres of our forestland are exposed to an abnormally high risk of fire, disease, and insect outbreaks. Nationwide, despite a cooperative fire protection system that continues to prove its worth, large wildland fires are again on the rise, often with devastating consequences for lives, property, and ecosystem health.

Today, we do not have a fire problem: We have a fuels problem. A critical issue facing our watersheds, especially in the Interior West, is the risk of unnaturally severe wildland fire. By using all the tools available to us—thinning, prescribed fire, invasive-weed control, and well-managed grazing—we can reduce hazardous fuel levels and live again within the ecological limits of the land. And if we take care of the land, it will take care of us.

But we don't yet have all the answers, and no single agency can do it alone. We need to continue building partnerships with universities, industry and environmentalists, State and Federal colleagues, local communities, Indian tribes, and other stakeholders in our Nation's natural resources. Increasingly, we need to look across our borders for partners in protecting natural resources worldwide. Science and professionalism must lead the debates on use, management, and conservation of our natural resources in ways that will restore healthy watersheds—watersheds that retain historic streamflows and are resilient in the face of natural events such as floods, drought, and fire.

That's where *Fire Management Today* comes in. The journal has a rich tradition of publishing contributions from a wide variety of sources, including industry, State

As we enter the next century, *Fire Management Today* can play a vital role in promoting a broad-based discussion of the fire-related issues we face, both nationally and internationally.

and Federal collaborators, international researchers, and other partners in wildland fire management. As we enter the next century, *Fire Management Today* can play a vital role in promoting a broad-based discussion of the fire-related issues we face, both nationally and internationally.

Fire Management Today has also consistently offered a reliable forum for scientists and professionals to discuss not only techniques and technologies, but also broad policy challenges, from prescribed fire use as early as the 1930's to wildland fire use in wilderness areas today. We will need that forum in the next century. For example, *Fire Management Today* can be instrumental in facilitating a broad information exchange on FIRE 21, the emerging interagency policy framework for addressing key issues associated with firefighter safety and wildland fire prevention, suppression, and use.

In 1936, Roy Headley, the head of the Forest Service's Division of Fire Control, introduced *Fire Control Notes* as a forum for anybody who discovers anything useful or has a criticism to make, a question to raise, or an experience to relate. That role hasn't changed for *Fire Management Today*, nor should it. For *Fire Management Today* to continue serving the wildland fire community well, all it need do is to realize Headley's vision of establishing "a common meeting ground" for wildland fire professionals. Keep up the good work, folks! ■

Websites on Fire*

Canadian Interagency Forest Fire Centre (CIFFC)

The CIFFC, based in Winnipeg, Manitoba, coordinates wildland fire management services for its member agencies in Canada's provinces and territories, including resource sharing with the United States and other countries. The CIFFC Website provides, among other things, a year-to-date statistical summary of wildland fires in Canada; graphs showing annual fires, hectares burned, and suppression resources committed since about 1980; the Canadian Daily Fire Situation Report (analogous to the Interagency Management Situation Report in the United States); and a list of upcoming fire-related meetings and conferences.
Found at <**http://www.ciffc.ca**>

International Crown Fire Modelling Experiment (ICFME)

Fires that sweep through the forest canopy—crown fires—can be dangerously unpredictable. The ICFME, conducted in Canada's Northwest Territories, began in 1997 under the auspices of the International Boreal Forest Research Association to help scientists better understand and model how crown fires start, propagate, and spread. The 10 ICFME fires conducted so far are among the most complex and best documented experimental crown fires anywhere. The ICFME Website features extensive information on the experiment, including updates on project plans, developments, and related fire weather; detailed annual progress reports; various photos of past burns and burn sites; the names and affiliations of dozens of participating scientists from Canada, the United States, and other countries; and articles on the ICFME in popular and scientific publications.
Found at <**http://www.nofc.forestry.ca/fire/fmn/nwt**>

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* *Occasionally,* Fire Management Today *briefly describes Websites brought to our attention by the wildland fire community. Readers should not construe the description of these sites as in any way exhaustive or as an official endorsement by the USDA Forest Service. To have a Website described, contact the editor, Hutch Brown, at 4814 North 3rd Street, Arlington, VA 22203, tel. 703-525-5951, fax 703-525-0162, e-mail: hutchbrown@erols.com.*

Fire Control Notes Offers Its Services*

Roy Headley

The Fire Control Meeting at Spokane, Washington, in February, 1936, gave the Forest Service Division of Fire Control in Washington, D.C., a mandate to issue from time to time a publication which would serve as a medium for exchange of information and ideas between all the groups and individuals who were doing creative work in forest fire control. On the assumption that readers will respond with ideas and information to publish, the mandate is accepted.

Over a period of 30 years since the inception of organized effort to stop the fire waste of American natural resources, impressive advances have been made. [A] considerable body of knowledge of the arts and sciences involved has accumulated. Systems of organizing and managing human forces and mechanical aids have in some instances attained dramatic efficiency. Fire research has won the respect of owners and managers of wild land. The advancement to date in technique entitles fire control to a place among the amazing technologies which have grown up in recent decades.

The advance of the technology of forest fire control is not, however, a completed thing. Its forward march has not even begun to slow down. On the contrary, there is good reason to anticipate a period of broader and more rapid growth. Fire control has won a large measure of public interest. Its relation to conservation of wild land resources is better understood. Financial support is increasing. A growing number of men are making technical contributions from a wider range of ability and training. More men know more about how to climb to new plateaus of efficiency in stopping this fire waste.

Future advances will come not from the work of small groups, but from the experience, thinking, and experiments of the large number of men now engaged in pushing back the frontiers of fire control. The integrated experience and study of such a body of interested men may easily yield results overshadowing all that has been gained so far.

The surprising thing is that the need for a vehicle for interchange of ideas among such men has not been recognized before. Widely scattered as they necessarily are, the creative efforts of individuals and separate groups cannot be fully effective without the aid of something which will serve as a common meeting ground, a clearing-house of developments. *Fire Control Notes* aspires to render that service. It hopes to be a carrier of whatever men need to know to keep abreast of developments and trends in fire control.

Fire Control Notes will seek to act as a channel through which useful or suggestive information may flow to each man in this field, whether he be a fire research worker attacking some fundamental of combustion, or a fire fighter, facing the flame and smoke, who discovers some new device for organizing a crew of laborers. These pages will also hope to be used as a mouthpiece for every man, whatever his job, who discovers something which would be useful to others, or who has a criticism to make, a question to raise, or an unusual fire experience to relate.

As implied by the name, "Fire Control Notes," it matters not how long or how short a contribution may be nor what angle of fire control is presented. The man who discovers some new device which can be presented in four lines owes it to himself and others to report it. Likewise, the fire research man who needs ten pages for a worthwhile presentation of his subject should share what he has learned

Fire Control Notes is to be a mouthpiece for anybody who discovers something useful to others or has a criticism to make, a question to raise, or an unusual fire experience to relate.

In December 1936, when this article was first published, Roy Headley was the head of the USDA Forest Service's Division of Fire Control, Washington, DC.

* This was the lead article in the first issue of *Fire Control Notes* (now known as *Fire Management Today*) in December 1936. The author introduces the journal and sets forth its purpose, which remains largely the same today.

with others who need his help or who may be needed to supply the intelligent interest required to sustain the inquiry.

The only requirement imposed upon contributions to *Fire Control Notes* is that they be interesting or helpful to some group of people concerned with some phase of fire control.

Fire Control Notes will be published intermittently as contributions accumulate. Distribution will not be limited to members of the Forest Service, but will include all who are cooperating with it in stopping forest fire waste. Copies will be sent to State forest organizations, cooperative protection associations, forest schools, Federal bureaus interested in fire control, and Canadian and other foreign organizations dealing with fire problems. Within reasonable limits, any individual who is not included in the organizations mentioned may be placed upon the mailing list by agreeing to constitute himself or herself a committee of one to discuss with friends the need for habits of care in the use of fire. Leaflets and other printed material may be obtained upon request for use in such discussions. ■

Mrs. Earl Hupp, lookout for the USDA Forest Service on Montana's Kootenai National Forest in 1943, showing her daughter Mollianne how to use a firefinder. Over the years, Fire Control Notes *and its successors,* Fire Management *and* Fire Management Notes, *published numerous articles on technology advances in wildland fire management—including advances in fire detection, from the lookout tools that were state-of-the-art in the 1940's to the high-tech solutions common today. Photo: Courtesy of National Agricultural Library, Special Collections, Forest Service Photograph Collection, Beltsville, MD (K.D. Swan, 1943; 434429).*

How Did *Fire Control Notes* Become *Fire Management Today*?

Hutch Brown

In 1973, *Fire Control Notes* abruptly changed its name to *Fire Management*. (Three years later, *Notes* was added back to the name—see sidebar.) The move paralleled a name change for the USDA Forest Service's fire organization (now Fire and Aviation Management) from the Division of Fire Control to the Division of Fire Management. As Forest Service Chief John R. McGuire (1973) explained, the new name symbolized "a significant change in our attitude and approach to managing fire." The old emphasis on fire control, said the Chief, was giving way to a new balance among the various components of wildland fire management, including prevention and fuels management.

The name change from *Control* to *Management* thus symbolized a watershed divide for the Forest Service's fire organization. The new name signaled a paradigm shift—a far-reaching programmatic reorientation that continues today as the wildland fire community strives to improve firefighter safety while striking the right balance among prevention, suppression, and fuels management (including fire use) for wildland resource protection. How did that change come about? The history of *Fire Management Today* itself offers clues.

Fire Control Mission

By 1936, when *Fire Control Notes* was established, fire control had triumphed in American forestry over "light burning," the seasonal practice of woodland burning for fuels management and other purposes (Pyne 1982). At the time, fire control seemed well grounded in both science and practical experience. Studies by Coert duBois (1914) and S.B. Show and E.I. Kotok (1924) seemed to have proved beyond a doubt the folly of light burning. The practice of frontier burning by settlers to clear fields and promote livestock fodder had helped ignite enormous conflagrations from the Alleghenies to the Cascades in the slash left by early loggers. From the Peshtigo Fire of 1871 through the Great 1910 Burn to the Tillamook Burn of 1933, such fires had resulted in the massive destruction of lives,

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Changing the journal's name from *Control* to *Management* signaled a programmatic shift that continues today as the wildland fire community strives to improve firefighter safety while striking the right balance among prevention, suppression, and fire use.

Fire Management Today—Whatever Happened to *Notes*?

In 1976, just 3 years after changing its name from *Fire Control Notes* to *Fire Management*, the journal added *Notes* back to its name. The journal's editor (1976) offered three reasons:

- To show continuity with the periodical's original name,
- To reflect the type of articles included (generally very short), and
- To prevent confusion between the periodical and the Forest Service staff unit also named Fire Management.

Today, these reasons are no longer compelling. After 1976, *Fire Management Notes* twice adopted a more versatile, sophisticated format; and many of its articles became comparable in size, scope, and complexity to those in academic periodicals. By the late 1990's, having long outgrown the short, newsy "Notes" format, *Fire Management Notes* was overdue for a name correction. By renaming itself now, in the year 2000, as *Fire Management Today*, the journal focuses on helping wildland fire professionals stay abreast of developments in wildland fire management as we enter the 21st century.

Forest Service leaders long regarded wildland fire as an evil to be stopped through rigorous, systematic fire control.

property, and timber resources. To many early conservationists, woods burning for any reason was at best a foolish risk that too often led to catastrophic resource waste.

Beginning with Gifford Pinchot, Forest Service leaders long regarded wildland fire as an evil to be stopped through rigorous fire control (Pyne 1982; West 1991). In 1923, when Forest Service Chief William Greeley was asked to summarize forest problems, he simply replied, "Stop the fires!" (Chambers 1987) In the 1930's, the Forest Service finally obtained the means for systematic wildland fire suppression: Abundant labor through the Civilian Conservation Corps allowed fire control to extend for the first time into the backcountry. In 1935, the Forest Service established the 10 A.M. Policy, which dictated that every wildland fire should be controlled by 10 a.m. on the morning after the fire was first reported. Every exception, including the prescribed burns that persisted in the Southern Region's coastal pine ecosystems, had to be authorized by the Chief (Devet 1975).

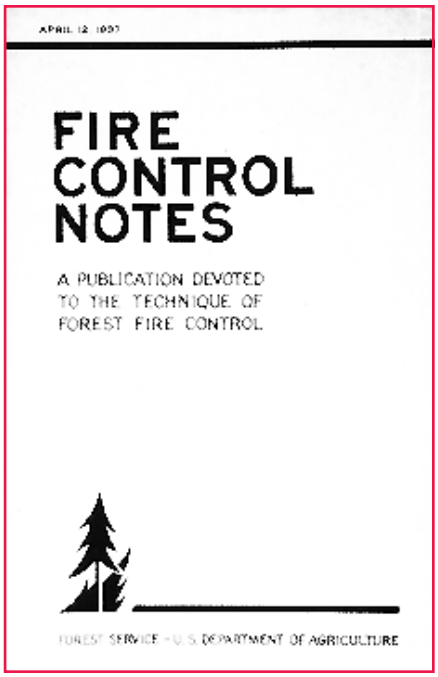
The fire control mission was reflected in the names of the Forest Service's fire organization and its new publication. In 1936, in the first issue of *Fire Control Notes*, Roy Headley, head of the Division of Fire Control, set the tone for the journal for decades to come. Citing 30 years of effort "to stop the fire waste of American natural resources," Headley (1936) pointed to "impressive advances" in "systems of organizing and managing human forces and mechanical aids" to control fire and end the waste. *Fire Control Notes* was to "serve as a medium for exchange of information and ideas" to help perfect "the technology of forest fire control."

Roots of a western hemlock exposed by fire and erosion on what is now Washington's Olympic National Forest, photographed in 1897 by Gifford Pinchot, first Chief of the USDA Forest Service. Appalled by such scenes, Pinchot and other early conservationists called for systematic fire control. Photo: Courtesy of National Agricultural Library, Special Collections, Forest Service Photograph Collection, Beltsville, MD (Gifford Pinchot, 1897; 911).

For fire control advocates, the fire problem was a technical problem. By facilitating information exchange, *Fire Control Notes* could help improve techniques and technologies for controlling wildland fire and eliminating resource waste. From 1936 until 1964, every issue of *Fire Control Notes*:

- Announced itself on the cover as "A Periodical Devoted to the Technique of Forest Fire Control," thereby representing fire concerns as technical problems of fire control; and
- Condensed the rationale for fire control into the statement, reprinted on the inside front or back cover, that "Forestry cannot restore the American heritage of natural resources if the appalling wastage by fire continues."

Until the 1970's, contributors to *Fire Control Notes* often repeated the "orthodox" view, as one author approvingly called it, of "forest fires as an evil" (Marsh 1947). "In probably much less than 100 years," another author confidently predicted, "conflagrations will be unknown" thanks to developments in fire control technique (Farmer 1942). For many, the relatively fire-free forests of northern Europe were the ideal. "What a contrast there is between man-caused fires in America and in Europe!" observed the editor of *Fire Control Notes* (Rachord 1937). Even after World War II, Edward Ritter (1947) from the Forest Service's Eastern Region could write wistfully of the



First cover design for Fire Control Notes. *From 1936 until 1964,* Fire Control Notes *announced itself on the cover as "A Periodical Devoted to the Technique of Forest Fire Control," reflecting the wildland fire community's early focus on suppression techniques and technologies. Photo: Karl Perry, USDA Forest Service, Washington Office, Washington, DC, 1999.*

"few forest fires in Germany." "Go east, young man!" he intoned, "if you are looking for a forest fire fighter's paradise." Not until much later did most wildland fire professionals come to realize that differences in climate, geography, and history had created fundamentally different fire regimes in northern Europe and North America. For much of North America, wildland fire conditions in northern Europe were largely irrelevant.

Fire control eclipsed not only the use of prescribed fire, but also the practice of fire prevention. On its face, fire control might logically have included prevention and even prescription to help control wildland fire ignition and behavior through fuels management. But under the concept of hour control established by Show and Kotok, the number of fire starts was

In 1964, passage of the Wilderness Act made the natural role of fire in backcountry wildland ecosystems a key concern for the wildland fire community.

unimportant as long as the fires were quickly put out. Under this logic, observed one critic (Chandler 1956), it made little sense to distract from fire control's primary purpose—rapidly extinguishing all fires—by fully integrating prevention, let alone prescription, into fire control planning. Accordingly, fire managers and the vast majority of contributors to *Fire Control Notes* focused primarily on detection, preparedness, and suppression, along with the associated equipment and technologies.

Paradigm Shift

Despite widespread devotion to fire control and to the ideal of intensively managed, fire-free forests, nagging doubts persisted. John R. Curry (1937), a senior researcher at the Forest Service's California Forest and Range Experiment Station, dismissed the "fallacious line of reasoning" that fire in America, sufficiently controlled, could reach the "minor status" it held in "the managed forests of Europe." Headley himself had once advocated light burning (Pyne 1982), and *Fire Control Notes* published a letter from Arthur W. Hartman (1950), the assistant regional forester for the Forest Service's Southern Region, condemning "the pure fire exclusionist" and describing the benefits of prescribed fire use in the South. Assistant Forest Service Chief Arthur A. Brown (1947), later the head of fire research for the Forest Service, pointed out the "increasing evidence that advanced [forestry] practice is likely to call for some use of fire as a tool of management in order to then reestablish some of nature's old relationships."

Brown's words proved visionary. Officially sanctioned fire use in the South had never extended beyond the Coastal Plain, except experimentally; fire control had prevailed in the Piedmont, Appalachians, and Ozarks. The 1950's brought signs that fire control in the South had not only failed to stop large fires, but had actually contributed to fire severity by permitting buildups of hardwood ladder fuels in pine forests (Riebold 1956). In 1957, partly in response to catastrophic fires in the South, *Fire Control Notes* printed an extensive list of abstracts by the Forest Service's Southern and Southeastern Forest Experiment Stations on fire use and effects from 1921 to 1955 (Bruce and Nelson 1957). Indications of a paradigm shift began to mount:

- In the 1950's, the success of Smokey Bear brought new attention and prestige to wildland fire prevention. From 1952 until 1993, almost every issue of *Fire Control Notes* and its successors included Smokey posters and other materials.
- In 1960, *Fire Control Notes* published an article by Robert D. McCulley (1960), the chief of forest management research at the Forest Service's Lake States Forest Experiment Station, exploring the natural role of fire and advocating fire use in forest

In 1978, the Forest Service adopted a pluralistic fire policy for using a mix of techniques, including suppression and fire use, to protect lives, property, and wildland resources.

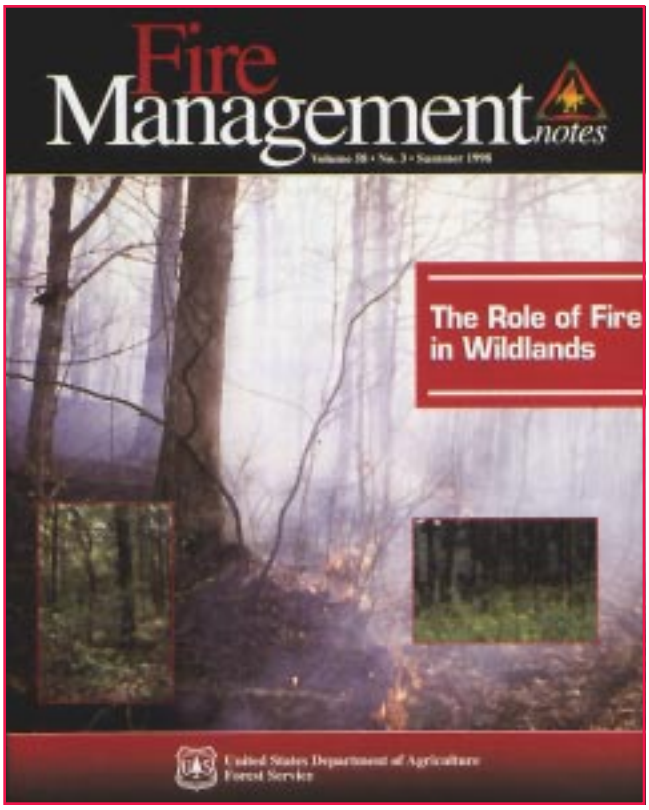
First Smokey image to appear in Fire Control Notes *(left), on the back cover of the Spring 1952 issue (it appeared in black and white); and cover design by Rudy Wendelin (right) for the Spring 1983 issue commemorating Smokey's 40th birthday. The words in the Smokey poster (left) reflect the fire control mission, reprinted in every issue of* Fire Control Notes *from 1936 to 1964, to "restore the American heritage of natural resources" by halting "the appalling wastage by fire." The Wendelin drawing (right) conveys Smokey's more fundamental message, still valid today, against careless fire use by wildland visitors. Photos: Karl Perry, USDA Forest Service, Washington Office, Washington, DC, 1999.*

First Fire Control Notes *cover to show a prescribed burn for silvicultural purposes, from the Summer 1966 issue. The burn occurred in South Carolina, where prescribed fires to sustain longleaf pine ecosystems had been common for many decades. After 1964, the journal's new cover design no longer referred to fire control as a "technique," thereby muting the traditional emphasis on fire control as a technical problem of fire suppression. Photo: Karl Perry, USDA Forest Service, Washington Office, Washington, DC, 1999.*

management. Articles followed within a few years on fire use not only in the Forest Service's Southern Region, but also in its Eastern, Northern, and Southwestern Regions.

- In 1963, *Fire Control Notes* published a lead article on wildland fire behavior studies in Australia (McArthur and Luke 1963), shifting attention away from the irrelevant model of northern Europe.
- In 1964, passage of the Wilderness Act made the natural role of fire in backcountry wildland ecosystems a key concern for the wildland fire community. After 1964, legislation such as the Wilderness Act, Forest and Rangeland Renewable Resources Planning Act (1974), and National Forest Management Act (1976) helped drive the paradigm shift from fire control to fire management. In a sign of change, the new design for *Fire Control Notes* in 1964 dropped the reference to fire control as a "technique" justified by the "appalling wastage by fire."
- In 1964, cover stories in *Fire Control Notes* on disastrous fires in heavily populated southern California (Nelson 1964) and New Jersey (Banks and Little 1964) portended the arrival of a new problem fire, the wildland–urban interface fire, in spite of fire control.
- In 1966, *Fire Control Notes* featured its first cover showing prescribed burning for silvicultural purposes in an open pine forest in South Carolina (Palmer and Devet 1966).

By 1967, the Forest Service was reviewing and revising its fire control policy to fully accommodate the natural role of fire in wildland ecosystems. In 1972, *Fire Control Notes* published a lead article on a new policy in the Forest Service's Northern Region to promote wildland fire use in wilderness areas (Aldrich and



Cover designs for the Winter 1975 issue of Fire Management *(left) and the Summer 1998 issue of* Fire Management Notes *(right), reflecting a continuing emphasis after 1964 on integrating the natural role of fire into wildland fire management. Through the 1995 Federal Wildland Fire Management Policy and Program Review, Federal partners reconfirmed their commitment to restoring the natural role of fire to wildland ecosystems, stating that fire will, "as nearly as possible, be allowed to function in its natural ecological role." Photos: Karl Perry, USDA Forest Service, Washington Office, Washington, DC, 1999.*

Mutch 1972). Another article called for reeducating the public that not all fire is bad and that fire plays a natural role in wildlands (Baldwin 1972).

A comprehensive new fire policy was emerging. In 1973, after its rechristening as *Fire Management*, the journal published an article by Jack S. Barrows (1973), a professor of forestry and natural resources at Colorado State University. Barrows declared that "forest fire management is based upon the concept that fires in the forest may be either good or bad" and that the new type of management balances forest ecology with the needs of people. In the next few years, *Fire Management* and *Fire Management Notes* published several similar articles describing or calling for pluralistic approaches to wildland fire management using a mix of prevention, suppression, and fuels management techniques tailored to local conditions.

By the early 1970's, the U.S. Department of the Interior (USDI) National Park Service, which had abandoned the 10 A.M. Policy in 1968, was developing fire management plans for the national parks. Louis L. Gunzel (1974), the chief ranger for the Saguaro National Monument in Arizona, outlined the monument's new fire management plan in an issue of *Fire Management*. In 1978, the Forest Service formally dropped the 10 A.M. Policy, adopting instead a pluralistic policy based on local fire management plans for utilizing a mix of techniques, including suppression and fire use, to protect lives, property, and wildland resources.

Fire Management Today—Its Role in the 21st Century

Today, through the National Wildfire Coordinating Group under the National Interagency Incident Management System, the Forest Service sets fire management policy jointly with the four USDI

To Burn or Not To Burn: Changes in Blueberry Management

Blueberries (*Vaccinium* spp.) are widely distributed across Canada and the United States in the shrub layers of jack pine, mixed-oak, and other forest communities at preclimax stages. Generally shade intolerant, blueberries do best on disturbed sites with full sun. To stimulate blueberry production, American Indians regularly set fire to blueberry fields, a practice adopted by European settlers and continued by farmers into the 20th century.

Early fire control advocates opposed blueberry burning as yet another discredited light-burning practice. Scott Pauley (1941), a forest ranger for the Wisconsin Conservation Department, published an article in *Fire Control Notes* focusing on the adverse effects of blueberry burning, particularly the damage that escaped fires can cause. Even well-controlled burning, Pauley argued, can degrade the soil and strip the land of vegetation, resulting in erosion.

By the 1980's, attitudes had profoundly shifted. Edward Kautz (1987), a fire suppression officer for the USDA Forest Service's Eastern Region, published an article in *Fire Management Notes* advocating prescribed fire use for blueberry management. "Natural blueberry fields used to be perpetuated by natural fires and Native American burning," Kautz noted, arguing that prescribed fire was needed to restore blueberries to their natural abundance.

Despite their conflicting positions, Pauley and Kautz generally agreed on the facts. Pauley acknowledged the horticultural benefits of blueberry burning, whereas Kautz cautioned that burning under certain conditions can have adverse effects. Pauley and Kautz came to different conclusions about the wisdom of blueberry burning mainly because they held radically different views on the nature of the fire problem facing the United States.

For Pauley, the problem was that uncontrolled blueberry fires "often spread for miles beyond the limits of the cleared area," like the great fires that had swept across the Lake States from the 1870's until the 1920's (including the notorious Peshtigo Fire of 1871). In the 1930's and 1940's, concern still focused on what the fire historian Stephen J. Pyne (1982; 1995) has called "frontier fire," the use of fire by early settlers for land clearing and other purposes. Such fires sometimes spread out of control, resulting in enormous holocausts. Systematic fire control addressed the lingering problem of frontier fire by stopping fires everywhere.

For Kautz, the problem was that "after centuries of human invasion into the wildlands and decades of fire control activities, the role of fire in blueberry production has been curtailed," an image of humans despoiling the wilderness by removing its fire. By the 1980's, a new problem fire had emerged, what Pyne (1982; 1995) has called "wilderness fire." Fire control itself had become part of the problem. The new fire management paradigm was designed to address the problem of wilderness fire through prescribed fire use, restoring the role of fire in wildlands.

The articles on blueberry burning by Pauley and Kautz suggest the historic role of *Fire Management Today* in mirroring and, by influencing readers, in driving the changes that have occurred in wildland fire management since the journal was founded in 1936. Readers can use *Fire Management Today* not only to gain technical knowhow, but also to trace how wildland fire management continues to change. Of course, old articles can be difficult to fathom when read out of context today. Fortunately, in his seminal work *Fire in America*, Pyne (1982) offers a conceptual framework for understanding the contributions made by Pauley, Kautz, and others to the cultural history of wildland fire in the United States.

land management agencies—the Bureau of Indian Affairs, Bureau of Land Management, National Park Service, and U.S. Fish and Wildlife Service. The South Canyon Fire tragedy in 1994, which cost the lives of 14 firefighters, sparked a joint reexamination of Federal wildland fire policy, culminating in the 1995 Federal Wildland Fire Management Policy and Program Review. In accordance with the policies adopted in the Review, *Fire Management Today* welcomes contributions on every aspect of wildland fire management, including planning, prevention, preparedness, suppression, fire use, ecosystem management, and the overarching concern of safety for both firefighters and the public.

Over the years, not the least of our services at *Fire Management Today* has been to faithfully mirror the changes that have sometimes rocked the wildland fire community (see sidebar on page 13). By using the journal to see where we were yesterday, the wildland fire community can perhaps better understand where we are today and where we will be—or ought to be—tomorrow.

Much of the role that Roy Headley laid out for *Fire Control Notes* in 1936 still applies today. *Fire Management Today* remains firmly committed to realizing Headley's vision of a "common meeting ground" where wildland fire professionals can exchange ideas and information, helping them stay abreast of the latest developments in wildland fire management. In the spirit of cooperative fire protection that Headley invoked, *Fire Management Today* also remains committed to serving the entire wildland fire community, including international partners. Finally, *Fire Management Today* remains open to all, no matter who they are or how brief their contributions, as long as they have something relevant, interesting, and helpful to share with other wildland fire professionals.

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Guide Available for Implementing Fire Management Policy

David L. Bunnell

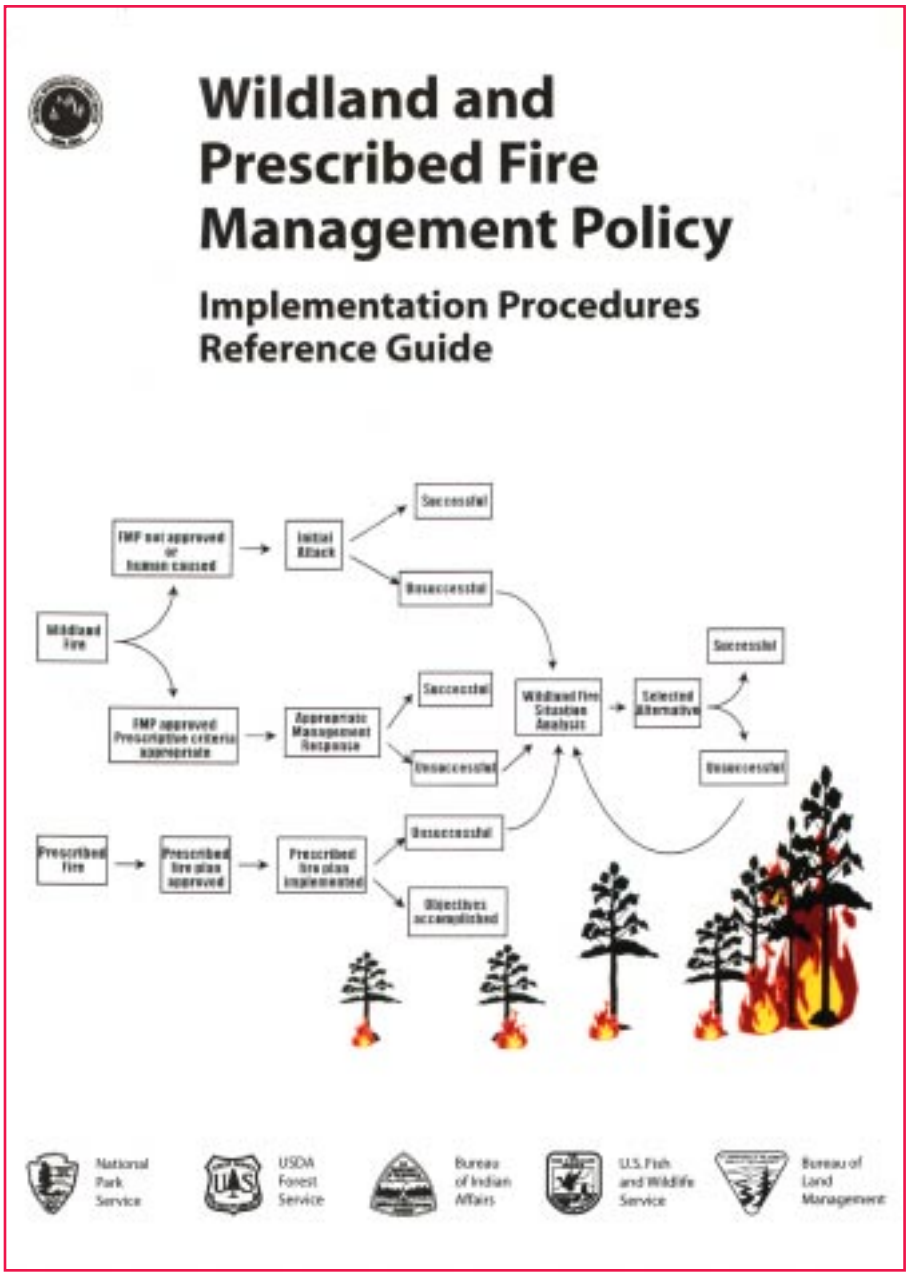
A guide is available to help wildland fire managers implement policy adopted by the 1995 Federal Wildland Fire Management Policy and Program Review. The 81-page, looseleaf guide was published in August 1998 by the National Interagency Fire Center in Boise, ID, under the title, "Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide." The guide establishes agreement among the USDA Forest Service and the U.S. Department of the Interior (USDI) Bureau of Indian Affairs, Bureau of Land Management, National Park Service, and U.S. Fish and Wildlife Service on implementing manual policy direction consistent with Federal wildland fire management policy. Under direction contained in Forest Service Manual 5140, the guide is incorporated as Forest Service policy.

Designed to be dynamic, the guide contains diagrams and illustrations that help make it easier to read and understand. The main chapter outlines separate policy implementation procedures for:

1. Wildland fires that are human caused or for which fire management plans are not approved;
2. Naturally ignited wildland fires for which fire management plans are approved and prescriptive criteria are appropriate for wildland fire use (formerly

Dave Bunnell is the national fire use program manager, USDA Forest Service, National Interagency Fire Center, Boise, ID.

Designed to be dynamic, the guide contains diagrams and illustrations that help explain the complexities of wildland fire use and prescribed fire application.



Cover of the guide available for implementing fire use policy adopted by the 1995 Federal Wildland Fire Management Policy and Program Review.

known as prescribed natural fires);
3. Prescribed fires; and
4. Wildland fire situation analyses.

The section on naturally ignited fires for wildland fire use is especially detailed, including guidance on fire assessment, decision-making, fire behavior prediction, risk assessment, and maximum manageable area determination.

Other chapters offer help in understanding the 1995 Federal wildland fire management policy and in coping with fiscal accounting and personnel regulations. The guide also contains a useful list of definitions for terms associated with wildland fire management policy, including the June 1997 terminology changes by the National Wildfire Coordinating Group. An extensive appendix contains checklists, worksheets, and additional documents.

The guide will be updated annually to address the many nuances of full policy implementation at all field locations. Changes to the guide will be negotiated among the Forest Service and the four USDI land management agencies. To obtain a copy of the guide, contact Dave Bunnell, National Fire Use Program Manager, USDA Forest Service, National Interagency Fire Center, 3833 S. Development Avenue, Boise, ID 83705-5354, dbunnell/wo_nifc@fs.fed.us (Internet e-mail), dbunnell/wo,nifc (IBM e-mail), 208-387-5218 (voice), 208-387-5398 (fax). ■

Fire Use Management Teams Monitor Wildland Fires*

Michael G. Apicello

For decades, land managers focused on suppressing wildland fires, often overlooking the role fire plays in improving ecosystem health and reducing fuel hazards. Fire use management teams (FUMT's) are part of a new approach. "These teams fill a void," said Tom Zimmerman, FUMT incident commander on the 1998 Main Salmon Complex Fire in central Idaho. "The highest priority fires used to be only suppression ones. Now, changes in funding and priority setting allow us to manage more wildland fires for resource benefits."

The Main Salmon Complex consisted of at least 15 lightning-caused fires burning on the Frank Church–River of No Return Wilderness. Zimmerman's FUMT monitored the fires' progress while mitigating threats to life and property, thereby using the fires to reduce ladder fuels encroaching on open stands of ponderosa pine.

FUMT's help land managers make and implement decisions that benefit the land. Each team consists of three to seven specialists, including an incident commander; section chiefs for operations, logistics, and planning; a prescribed fire behavior analyst; and one or two trainees. The teams collect and analyze information on fire and weather behavior, fuels and terrain, natural resources, effects of the fire and smoke on the public, and risk assessments. Based on these data, the teams map out the largest area in which the fire will be allowed to burn. Finally, they develop and implement a detailed management plan.

Designed to supplement incident management teams, FUMT's allow field offices to focus on other fire management activities, such as initial or extended attack. For more information on the teams, contact Mike Apicello, National Interagency Fire Center, 3833 South Development Avenue, Boise, ID 83705-5354, 208-387-5460 (voice), 208-387-5386 (fax), apicello_mike/wo_nifc@fs.fed.us (e-mail).

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* Condensed from an article in the *On-line NIFC Newsletter,* Fall 1998, at <http://www.nifc.gov/news/burningissues/fall98/fumts.htm>.

Fire on the *Really* Big Screen: A Documentary With a Difference

Hutch Brown

Wildfire: Feel the Heat!, a documentary released in March 1999 by Discovery Pictures, the film division of Discovery Communications, Inc., offers thrills to the general public and insights into what wildland firefighting is all about. The large-format film fills giant 70-foot (21-m) screens, enhancing the illusion of immediacy for audiences. In one memorable sequence, a camera attached to a smokejumper lets you drop vicariously from a plane and even tumble after hitting the ground, your ears filled with the sound of the impact.

> "Wildland firefighting is a gargantuan, largely unsung effort. If audiences come away with the story of firefighting from watching the film, then I think we'll have accomplished a lot."
>
> *–Producer Mick Kaczorowski*

Dramatic Fireline Footage

Along with the thrills, audiences get an idea of what wildland firefighters actually do. The 45-minute film includes striking fireline footage from the 1997 fire seasons in Australia, southern California, and the Northwestern United States, paying tribute to the skill and dedication of wildland firefighters worldwide. The camera focuses on firefighting techniques and equipment, such as building fireline with pulaskis and felling snags with chain saws. For the U.S. fires, the main emphasis is on type 1 suppression resources, including smokejumpers, hotshots, helirappelers, airtankers, and helicopters. Also featured are fire detection, fire weather forecasting, prescribed fire for fuels management, and firefighting in the wildland–urban interface. The narrative is generally accurate and well designed to build public understanding and appreciation for wildland firefighting.

Most documentaries on wildland fire are designed to titillate audiences by featuring fireline action. The Discovery film does more, stressing the natural inevitability of wildland fire and the cost-effectiveness of using fire to reduce fuels. Still, the film's main focus remains the drama of wildland firefighting. "Fire bears down on you," says firefighter Shonda Murray, "determined to take your oxygen away and make you bow down to it. It won't let go. It wants to make sure you know who's boss." Such fireline perspectives,

Scene from Wildfire: Feel the Heat! *during the 1997 fire season in Australia. A firefighter uses a hose to help battle a blaze during one of Australia's worst fire seasons in memory. Photo: Courtesy of Discovery Pictures, ©1997.*

Hutch Brown is the editor of Fire Management Notes, *Arlington, VA.*

though lyrical and compelling, tend to treat wildland fire as an adversary, rarely acknowledging its ecological role. The film largely misses the opportunity to explore the long-term role that fire plays in shaping wildland ecosystems.

Collaboration Benefits

Discovery's film crew benefited from close collaboration with staff at the National Interagency Fire Center (NIFC) in Boise, ID. Before making the documentary, Discovery signed an agreement to work together with the five Federal land management agencies at NIFC (the USDA Forest Service and the U.S. Department of the Interior Bureau of Indian Affairs, Bureau of Land Management, National Park Service, and U.S. Fish and Wildlife Service). Forest Service staff in particular helped facilitate much of the filming.

The 15-person Discovery crew was divided into aerial and ground teams for filming. Safety was the first priority. Aerial filming was done with cameras on specially designed exterior aircraft mounts approved by the Federal Aviation Administration. (For a discussion of aviation safety issues during the filming, see *Fire Management Notes* volume 58, number 4, pages 31–34.) Moreover, each member of the Discovery crew was fully trained as a red-carded firefighter. "With our training," said director Mike Slee, "we were embraced and able to not only get the shots but ultimately convey a feel for the immediacy and dangers of life on the fireline."

As part of the agreement, Discovery made its extensive educational network available for sharing the latest information on wildland fire management with educators in the classroom. Although the film itself does not explore wildland fire ecology, the educational opportunities associated with it can help build public appreciation for the natural role of wildland fire. "We're very selective on documentaries," noted Mike Apicello, a Forest Service public affairs officer at NIFC who worked closely with the Discovery crew. "This one not only has a global audience, but the opportunity to use Discovery's educational networks to inform people, especially young people, about wildland fire."

Scene from Wildfire: Feel the Heat! *A firefighter uses a flamethrower to ignite a prescribed fire for fuels management. The Discovery film empasizes the cost-effectiveness of using fire to reduce fuels. Photo: Courtesy of Discovery Pictures, ©1997.*

Study Guide for Teachers

In partnership with the Government, Discovery developed a comprehensive study guide, written by subject matter experts and reviewed by teachers, that is available free to educators. Designed with material appropriate for both elementary and junior high school students, the guide can be utilized to augment curricula in ecology, conservation, and social studies. It can be used either before or after viewing the film or as a stand-alone device to help students understand fire safety, wildland fire (including fire's role in nature), and natural resource management. Materials from the guide are posted on Discovery's Website, including lesson plans for grades 5 through 8 on fire-adapted plants, fire ecology, living with fire, and fire chemistry, and an additional educational module on personal fire safety.

Discovery's networks worldwide have also used companion programming, such as the television shows *A Smoke Jumper's Story* (first aired in March 1999 on the Discovery Channel) and *Inside the Inferno* (premiered in May 1999 on the Learning Channel), to help build public appreciation for wildland firefighting. *Wildfire: Feel the Heat!* is being screened in specially designed theaters nationwide. For locations and dates and for supplementary educational materials on wildland fire, see the Discovery Website at <http://www.wildfire.discovery.com>. ■

Covers for *Fire Management Today*—Not Just Pretty Pictures

Delvin R. Bunton

Front covers for *Fire Management Today* under its earlier names, *Fire Control Notes* (1936–72), *Fire Management* (1973–75), and *Fire Management Notes* (1976–99), have changed dramatically over the years. Covers for the first 22 volumes were all about the same—a uniform gray with little more than the title, volume and issue, and year (table 1). These simple covers fit the era, reflecting not only the demand for utter frugality during the Great Depression, but also the relatively high cost of graphic design before the advent of desktop publishing.

In the 1960's, covers began to include more graphic design. Ink artwork first livened a cover in 1962 to commemorate the journal's 25th anniversary. The first cover photos (in black and white) followed in 1964. All but 24 of the 133 covers since 1964 feature photos. Color first appeared in 1989 in a red border on the front of volume 50(1) and in a full-color rendition of Smokey on the back. The special Smokey issue in 1992–93 (volume 53–54(S)) was the first to feature color on both the front cover and throughout the issue. Although volume 55 used at least some color in all issues, full color inside and out did not become standard until volume 56(2) in 1996.

Cover photos often introduce the lead article or the theme for an entire issue.

Cover photos prior to about 1992 often introduced one or more major articles. Examples include the computer terminal on the cover of volume 42(4) in 1981 and the fire shelter cutaway on the cover of volume 47(2) in 1986 (for the corresponding cover articles, see the index in this issue, *Information Systems*, and *Equipment: Firefighter Protection*, respectively). Some covers show our rich history, including:

- A 1931 telephone system on a ridgetop in volume 33(3),
- The first woman lookout in 1912 in volume 45(4),
- An early smokejumper during World War II in volume 46(1), and
- An airtanker in action in volume 52(2).

Covers since 1995 generally fit the overall issue theme. Two issues in 1997—a wildland fire weather issue (volume 57(2)) showing a lightning bolt on the cover, and a wildland–urban interface issue (volume 57(4)) with a blazing wildland structure on the cover—are some of the most dramatic examples.

Although most covers for *Fire Management Today* feature striking fire-related photos or other artwork, they also do more. Next time you pick up an issue, look beyond the pretty pictures for the message inside! ■

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Table 1—*Photos and artwork on front covers of* Fire Management Today*, 1936–99.*[a]

Vol.(No.)	Year	Description
1[b]	1936–37	Clip art—Conifer and flame.
2–22[c]	1938–61	—
23[b]	1962	Line art—Dozer on a fire with single-engine aircraft flying overhead.
24[b]	1963	Line art—Dozer and ground crew building fireline.
25(1)	1964	Photo—Aerial view of a wildland fire in southern California threatening homes and other improvements.
25(2)	1964	Photo—TBM airtanker making drop in test area.
25(3)	1964	Photo—Home and surrounding woodland destroyed by wildland fires, in New Jersey, 1963.
25(4)	1964	Photo—Flail trencher being used to quickly build a fireline.
26(1)	1965	Photo—Aerial view of the USDA Forest Service's Redmond Air Center, Redmond, OR.
26(2)	1965	Photo—Native weather observer at Canyon Village, AK.
26(3)	1965	Photo—Infrared imagery of the 1963 Gilkinson Fire, Wallowa–Whitman National Forest, OR.
26(4)	1965	Photo—Crown fire in pine on a ridgetop.
27(1)	1966	Photo—Mars flying boat dropping water on a slash fire in British Columbia, Canada.
27(2)	1966	Photo—Treated brush pile burning shortly after ignition.
27(3)	1966	Photo—Prescribed fire burning crew starting a backfire in an open pine forest in South Carolina.
27(4)	1966	Photo—U.S. Marine Corps HR25 helicopter dropping water on wildland fires in California.
28(1)	1967	Photo—Aerial view of fuel break that stopped the Horse Fire, Mendocino National Forest, CA.
28(2)	1967	Photo/line art—Small ground tankers, early 1930's and 1987.
28(3)	1967	Photo—Prevention helicopter scouting a small wildland fire on Clark National Forest, MO.
28(4)	1967	Photo—Mobile fire laboratory at the Southern Forest Fire Laboratory, Macon, GA.
29(1)	1968	Photo—Typical chaparral-covered watershed on Angeles National Forest, CA.
29(2)	1968	Photo—Slash reduction using a rolling chopper on Medicine Bow National Forest, WY.
29(3)	1968	Photo—Infrared imagery of the 1967Sundance Fire, Kaniksu National Forest, ID.
29(4)	1968	Photo—B–26 airtanker dropping retardant on a small wildland fire.
30(1)	1969	Photo—High volume sprayer applying retardant to a strip 60 feet (18 m) wide.
30(2)	1969	Photo—Typical lookout with telephone and heliograph, 1912.
30(3)	1969	Photo—Convection currents intensifying a wildland fire in mountainous terrain.
30(4)	1969	Photo—Fire lookout trainee sighting smoke during a simulator exercise.
31(1)	1970	Photo—Heavy construction slash along a forest road, fuel for a future wildland fire.
31(2)	1970	Photo—Helicopter flying overhead after transporting crews to fire camp.
31(3)	1970	Photo—Smoke from slash burning, a potential source of air pollution.
31(4)	1970	Photo—Aerial view of Boise Interagency Fire Center, ID.
32(1)	1971	Photo—The 1970 Gold Ridge Fire on Wenatchee National Forest, OR.
32(2)	1971	Line art—Firefighters with helicopter overhead, from the 1971 MGM documentary film *Wildfire!*
32(3)	1971	Photo—The 1971 Little Sioux Fire, Boundary Waters Canoe Area, Superior National Forest, MN.
32(4)	1971	Photo—Smokejumper nearing the ground on a wildland fire in Montana.
33(1)	1972	Photo—C–130 Hercules airtanker dropping retardant on 1971 Romero Fire near Santa Barbara, CA.
33(2)	1972	Photo—National fire training logo against backdrop of crown fire in conifers at night.

Table 1—*Photos and artwork on front covers of* Fire Management Today*, 1936–99*[a] *(continued).*

Vol.(No.)	Year	Description
33(3)	1972	Photo—Fire guard using a ridgetop telephone to report the 1931 Bald Creek Fire, Siskiyou National Forest, CA.
33(4)	1972	Photo—Smokey fire danger level sign.
34(1)	1973	Photo—Firefighter throwing dirt into flames.
34(2)	1973	Clip art—Fire management flame logo with statement by USDA Forest Service Chief John R. McGuire on name change for Forest Service fire organization.
34(3)	1973	Photo—Firefighters rappelling from helicopter to fire.
34(4)	1973	Photo—Abandoned campfire left smoldering in pine forest.
35(1)	1974	Photo—Window view of burning chaparral near homes.
35(2)	1974	Photos—Train traveling on tracks in wildland area; track buckling caused by a burning trestle in a railroad fire.
35(3)	1974	Photo—William R. Moore, chief of fire management for the USDA Forest Service's Northern Region, exiting a small plane.
35(4)	1974	Clip art—National fire training course logos.
36(1)	1975	Line art—Principles of fire management in land use planning.
36(2)	1975	Photo—Fire tools and supplies at fire camp.
36(3)	1975	Photos—Two prospective firefighters taking Step Test.
36(4)	1975	Photo—Satellite image showing smoke swirl from Tenaja Fire, CA.
37(1)	1976	Clip art/photo—Fire safety symbol against backdrop of large wildland fire burning in hilly brushland.
37(2)	1976	Reproductions—Wildfire statistics publication covers.
37(3)	1976	Line art—Circuit diagram.
37(4)	1976	Photo—CH–54A helicopter delivering tractor to a remote fire.
38(1)	1977	Photo—Firefighter mopping up on Comforter Mountain Fire, CO.
38(2)	1977	Photo—Ground crew boarding a large transport helicopter in mountainous terrain.
38(3)	1977	Photo—San Dimas forestland residues machine on a forest road.
38(4)	1977	Photo—Ground crew passing firehose on the 1977 Hog Fire, CA.
39(1)	1978	Photo—Aerial view of large tundra fire in Alaska, 1977.
39(2)	1978	Photos—Collage of railroad right-of-ways and area burned by railroad fire.
39(3)	1978	Photo—Tractor covered with heat-resistant protective foam.
39(4)	1978	Photo—House destroyed by wildland fire in the wildland–urban interface.
40(1)	1979	Photo—Heavy down woody fuels along stream.
40(2)	1979	Photo—Tools for gathering weather information.
40(3)	1979	Photo—Heavy smoke from fire burning in conifers on a hillside in Colorado.
40(4)	1979	Photo—Firefighter using infrared viewer to locate hotspots for mopup.
41(1)	1980	Reproductions—*Fire Management Notes* cover designs over the years.
41(2)	1980	Photo—Fire manager checking results of burn in conifers on a steep slope.
41(3)	1980	Photo—Results from prescribed burn to reduce slash on Okanogan National Forest, WA.
41(4)	1980	Photo—Smoke plume from prescribed fire in the USDA Forest Service's Northern Region.
42(1)	1981	Photo—Interagency helitack team posing in Colorado.
42(2)	1981	Photo—Fire prevention display in San Bernardino County, CA.
42(3)	1981	Line art—FIRETIP technology available for transfer to cooperators.
42(4)	1981	Photo—Graphics computer terminal used for fire dispatch on the USDI Bureau of Land Management's Vale District, OR.

Table 1—*Photos and artwork on front covers of* Fire Management Today*, 1936–99*[a] *(continued).*

Vol.(No.)	Year	Description
43(1)	1982	Photo—Wildland fire burning on Guam on a hill overlooking the ocean.
43(2)	1982	Line art—Firefighter using a drip torch to ignite strip head fires.
43(3)	1982	Photo—Portable instrument for measuring woody fuel moisture.
43(4)	1982	Line art—Firefighter with shovel on prescribed burn; deer feeding on old burn.
44(1)	1983	Line art—Firefighters building fireline.
44(2)	1983	Clip art—National Interagency Incident Management System (NIIMS) logo.
44(3)	1983	Line art—Bulldozer carving out firebreak.
44(4)	1983	Photo—Excess military vehicle converted by Texas Forest Service for wildland firefighting.
45(1)	1984	Line art—Smokey with Bambi and friends celebrating Smokey's 40th birthday.
45(2)	1984	Line art—Seated Smokey showing same message after 40 years.
45(3)	1984	Line art—Urban and wildland firefighters, Missoula, MT.
45(4)	1984	Photo—First woman fire lookout, Olympic National Forest, WA, 1920.
46(1)	1985	Photo—Lt. Clifford Allen, smokejumping officer of 555th Parachute Infantry, 1940's.
46(2)	1985	Photo—Ranger on horseback scanning for fires, Cibola National Forest, NM, 1922.
46(3)	1985	Photo—Ranger using a map and compass to measure distance to forest fire, Kootenai National Forest, MT, 1927.
46(4)	1985	Photo—The 1985 Butte Fire on Salmon National Forest, ID.
47(1)	1986	Photo—Forklift loading firehose onto truck at Boise Interagency Fire Center, ID.
47(2)	1986	Photo—Fire shelter with section cut away to demonstrate use.
47(3)	1986	Photo—Wildland firefighter with personal protective equipment.
47(4)	1986	Photo—Helicopter with helitorch unit.
48(1)	1987	Photo—Firefighter firing fuel with drip torch.
48(2)	1987	Photo—Smokechaser on horseback watching for lightning on Sawtooth National Forest, ID, 1929.
48(3)	1987	Photo—Firefighters using handtools on Hanover Fire near Riggins, ID.
48(4)	1987	Photo—Site of the 1986 Joseph Canyon Fire on Wallowa–Whitman National Forest, OR.
49(1)	1988	Photo—Firewagon used by the Massachusetts Forestry Department, 1923.
49(2)	1988	Photo—Gene Benedict, branch chief, Fire Management and Recreation, USDA Forest Service, at new McCall Smokejumper Base on Payette National Forest, ID.
49(3)	1988	Photo—Fire lookout tower in Israel..
49(4)	1988	Photo—PB4Y–2 airtanker making retardant drop.
50(1)	1989	Photo—Firetruck on Mendocino National Forest, CA, 1923.
50(2)	1989	Photo—Lightning Peak Lookout, ID, 1937.
50(3)	1989	Photo—CCC enrollees at the 1936 Poverty Ridge Fire on Siskiyou National Forest, OR.
50(4)	1989	Photo—Emergency rations for smokechasers in Montana, 1928.
51(1)	1990	Photo—Hurricane Hugo blowdown on Francis Marion and Sumter National Forest, SC.
51(2)	1990	Photo—Firefighters resting in lingering smoke from the 1985 Butte Fire on Salmon National Forest, ID.
51(3)	1990	Photo—Winner of wildland fire prevention poster contest in Michigan holding winning poster.
51(4)	1990	Photo—Firefighters fighting to save structure in the wildland–urban interface.
52(1)	1991	Line art—Shift plan cover for Silverdome Fire, ID, 1989.
52(2)	1991	Photo—Airtanker 27, a P–3A, dropping retardant.

Table 1—*Photos and artwork on front covers of* Fire Management Today, *1936–99*[a] *(continued).*

Vol.(No.)	Year	Description
52(3)	1991	Photo—Children viewing infrared equipment at Discovery Fair.
52(4)	1991	Photo—Wyoming Smokebusters building fireline on prescribed fire.
53–54(1)	1992–93	Photo—Smoldering combustion in trembling aspen stand.
53–54(2)	1992–93	Color artwork—"Burning Snag," firefighters near burning snag with airtanker overhead.
53–54(3)	1992–93	Photo—"Light hand on the land" suppression practices.
53–54(4)	1992–93	Photo—Representatives of 555th Parachute Infantry Battalion with Smokey.
53–54(S)	1992–93	Poster art—Smokey poster ("Only You") from the 1985 Cooperative Forest Fire Prevention Campaign.
55(1)	1995[d]	Black-and-white artwork—Stylized flame against wildland fire management activities.
55(2)	1995	Photo—Severe wildland fire in conifers on Colville National Forest, WA.
55(3)	1995	Photo—Entrapped firefighters deploying fire shelters.
55(4)	1995	Photo—Incident commander briefing fire crew.
56(1)	1996	Photo—S–64 helitanker dropping water.
56(2)	1996	Photo—Firefighter igniting prescribed burn on Zion National Park, UT.
56(3)	1996	Clip art/reproductions—FIRE 21 logo against a collage of report covers.
56(4)	1996	Photo—Aerial view of the 1985 Butte Fire on Salmon National Forest, ID.
57(1)	1997	Photos—Excess military trucks converted for wildland firefighting.
57(2)	1997	Photo—Nocturnal lightning strike in Alabama.
57(3)	1997	Photo—Recreation area destroyed in the 1996 Buffalo Creek Fire, Pike and San Isabel National Forests, CO.
57(4)	1997	Photo—The 1996 Miller's Reach Fire in Alaska's wildland-urban interface.
58(1)	1998	Photo—Airtanker 14 dropping retardant during the 1994 Indian Creek Fire, OR.
58(2)	1998	Color artwork—"Restoring America's Forests," healthy ponderosa pine ecosystem.
58(3)	1998	Photos—Prescribed surface fire on Hoosier National Forest, IN.
58(4)	1998	Photos—Helicopters and airtankers, past and present.
59(1)	1999	Photos—Helicopter rappelling; Airtanker 00, a P3–A, dropping retardant; S–64 helitanker dropping water.
59(2)	1999	Photos—The 1988 Hell Roaring Fire, Yellowstone National Park, WY; computer equipment in fire camp.
59(3)	1999	Poster art—Smokey poster from the 1999 Cooperative Forest Fire Prevention Campaign.
59(4)	1999	Color artwork—"Siege of '96," Hotshot crew and S–64 helitanker on Stanislaus National Forest, CA, 1996.

Note: Does not include back covers. Though absent in most volumes, back covers are found in all issues of volumes 13(2) through 24(4) and in a few other issues. Most back covers are wildland fire prevention art featuring Smokey Bear.
a. Includes covers for *Fire Control Notes* (1936–72), *Fire Management* (1973–75), and *Fire Management Notes* (1976–99).
b. Same cover for all numbers in the volume.
c. Same cover for all volumes and numbers.
d. Publication suspended in 1994, resumed in 1995.

Using Indexes for *Fire Management Today*

Hutch Brown

Since its establishment in 1936 as *Fire Control Notes*, *Fire Management Today* has been a valued source of information on wildland fire management. For example, the well-known fire historian Stephen J. Pyne (1982; 1995) specifically mentions the journal as a source for historical fire research. (Steve Pyne (1979) has also been a contributor.)

To help readers and researchers find articles by author and subject, the journal has published a series of indexes. Beginning in 1956, annual indexes appeared almost every year in one of two formats:

- Volumes 17–27 (1956–66)—a 1-year combined author/subject index in the fourth issue of each volume; and
- Volumes 28–59 (1967–99)—separate 1-year author and subject indexes in the first issue of the subsequent volume (except for skipped years 1973, 1974, and 1980, for which separate author and subject indexes appear in subsequent volumes).

In addition, the journal has published four indexes covering 6 or more years, including indexes for:

- Volumes 1–6 (1936–42)—a combined author/subject index (unnumbered, undated);
- Volumes 7–16 (1946*–55)—a combined author/subject index (volume 16(4), October 1955);
- Volumes 17–24 (1956–63)—a combined author/subject index (unnumbered, 1964); and
- Volumes 25–30 (1964–69)—separate author and subject indexes (unnumbered, July 1970).

The 30-year index in this issue, combined with the four previous long indexes, covers the history of *Fire Management Today* from 1936 through 1999.

This issue of *Fire Management Today* contains a fifth long index, a 30-year subject index compiled by Delvin Bunton from volumes 31 through 59 (1970–99). By utilizing the 30-year index together with the four previous long indexes, users can find articles indexed by subject for the entire history of the journal from 1936 through 1999. Users interested in searching for articles by author in volumes 30 through 59 can do so by accessing the index on the *Fire Management Today* Website at <http://www.fs.fed.us/land/fire/firenote.htm>.

Entries for all *Fire Management Today* indexes, including the 30-year index in this issue, show only the volume and issue number, not the year of publication. Moreover, the journal has twice suspended publication and thrice changed its name, and not all volumes have the standard four issues. For user convenience, table 1 shows how volume numbers for the journal correspond to journal name, number of issues, year of publication, and index(es) where articles are cataloged.

Past issues and indexes of *Fire Management Today* and its predecessors are generally available in the libraries of research institutions such as universities. A subscription form is on the back cover of current issues of *Fire Management Today*. For more information on how to obtain copies of *Fire Management Today*, contact April J. Baily, F&AM Staff, P.O. Box 96090, Washington, DC 20090-6090, 202-205-0891 (voice), 202-205-1272 (fax), abaily/wo@fs.fed.us (Internet e-mail).

Literature Cited

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Pyne, S.J. 1982. Fire in America: A cultural history of wildland and rural fire. Seattle and London: University of Washington Press. 654 p.

Pyne, S.J. 1995. World fire: The culture of fire on Earth. Seattle and London: University of Washington Press. 384 p. ■

Hutch Brown is the editor of Fire Management Today, *Arlington, VA.*

* *Publication of* Fire Control Notes *was suspended from 1942 to 1946 during World War II.*

Table 1—*Volumes of* Fire Management Today *under its former names, by journal name, number of issues, year of publication, and index(es) where articles are cataloged.*

Volume	Journal name	No. issues	Year	Index	
				Short [a]	Long [b]
1	*Fire Control Notes*	7[c]	1936–37	—	A
2	*Fire Control Notes*	1	1938	—	A
3	*Fire Control Notes*	4	1939	—	A
4	*Fire Control Notes*	4	1940	—	A
5	*Fire Control Notes*	4	1941	—	A
6	*Fire Control Notes*	3	1942	—	A
7	*Fire Control Notes*	3	1946[d]	—	B
8	*Fire Control Notes*	3[e]	1947	—	B
9	*Fire Control Notes*	3[e]	1948	—	B
10	*Fire Control Notes*	4	1949	—	B
11	*Fire Control Notes*	4	1950	—	B
12	*Fire Control Notes*	4	1951	—	B
13	*Fire Control Notes*	4	1952	—	B
14	*Fire Control Notes*	4	1953	—	B
15	*Fire Control Notes*	4	1954	—	B
16	*Fire Control Notes*	4	1955	—	B
17	*Fire Control Notes*	4	1956	17(4)	C
18	*Fire Control Notes*	4	1957	18(4)	C
19	*Fire Control Notes*	4	1958	19(4)	C
20	*Fire Control Notes*	4	1959	20(4)	C
21	*Fire Control Notes*	4	1960	21(4)	C
22	*Fire Control Notes*	4	1961	22(4)	C
23	*Fire Control Notes*	4	1962	23(4)	C
24	*Fire Control Notes*	4	1963	24(4)	C
25	*Fire Control Notes*	4	1964	25(4)	D
26	*Fire Control Notes*	4	1965	26(4)	D
27	*Fire Control Notes*	4	1966	27(4)	D
28	*Fire Control Notes*	4	1967	29(1)	D
29	*Fire Control Notes*	4	1968	30(1)	D
30	*Fire Control Notes*	4	1969	31(1)	D
31	*Fire Control Notes*	4	1970[f]	32(1)	E
32	*Fire Control Notes*	4	1971[f]	33(1)	E
33	*Fire Control Notes*	4	1972[f]	34(1)	E
34	*Fire Management* [g]	4	1973[f]	37(1)	E
35	*Fire Management*	4	1974	37(1)	E
36	*Fire Management*	4	1975	37(1)	E
37	*Fire Management Notes* [h]	4	1976	38(1)	E
38	*Fire Management Notes*	4	1977	39(1)	E

Table 1—*Volumes of* Fire Management Today *under its former names, by journal name, number of issues, year of publication, and index(es) where articles are cataloged (continued).*

Volume	Journal name	No. issues	Year	Index	
				Short [a]	Long [b]
39	*Fire Management Notes*	4	1978[f]	40(1)	E
40	*Fire Management Notes*	4	1979[f]	41(1)	E
41	*Fire Management Notes*	4	1980[f]	43(1)	E
42	*Fire Management Notes*	4	1981[f]	43(1)	E
43	*Fire Management Notes*	4	1982[f]	44(1)	E
44	*Fire Management Notes*	4	1983	45(1)	E
45	*Fire Management Notes*	4	1984	46(1)	E
46	*Fire Management Notes*	4	1985	47(1)	E
47	*Fire Management Notes*	4	1986	48(1)	E
48	*Fire Management Notes*	4	1987	49(1)	E
49	*Fire Management Notes*	4	1988	50(1)	E
50	*Fire Management Notes*	4	1989	51(1)	E
51	*Fire Management Notes*	4	1990	52(1)	E
52	*Fire Management Notes*	4	1991	53–54(1)	E
53–54	*Fire Management Notes*	5[i]	1992–93[j]	55(1)	E
55	*Fire Management Notes*	4	1995	56(1)	E
56	*Fire Management Notes*	4	1996	57(1)	E
57	*Fire Management Notes*	4	1997	58(1)	E
58	*Fire Management Notes*	4	1998	59(1)	E
59	*Fire Management Notes*	4	1999	—	E

a. Short indexes covering 1 to 3 years are contained in issues of the journal itself, shown by volume and number.
b. Long indexes covering 6 or more years include index A (undated), published separately from the journal in about 1942; index B, published in *Fire Control Notes* volume 16, number 4; index C, published separately from the journal in 1964; index D, published separately from the journal in July 1970; and index E, published in this issue of *Fire Management Today*.
c. Issues in volume 1 are unnumbered and dated by month.
d. Publication of *Fire Control Notes* was suspended from 1942 to 1946 due to World War II.
e. Numbers 2 and 3 are combined in a single issue.
f. Although the first issue shows 2 years (e.g., Winter 1969–70 for volume 31), the second year shown is the actual year of publication (e.g., 1970 for volume 31).
g. The name changed from *Fire Control Notes* to *Fire Management* in the Spring 1973 issue (volume 34(2)).
h. The name changed from *Fire Management* to *Fire Management Notes* in the Spring 1976 issue (volume 37(2)).
i. Volume 53–54 includes four numbered issues and a fifth, unnumbered special issue to commemorate Smokey Bear's 50th birthday in 1994.
j. Publication of *Fire Management Notes* was suspended in 1994.

Creating an Index That Mirrors Our Past

Delvin R. Bunton

Within the many pages of *Fire Management Today* under its earlier names, *Fire Control Notes* (1936–72), *Fire Management* (1973–75), and *Fire Management Notes* (1976–99), a reader can discover professional debates and concerns, techniques for fire control and management, and reviews of the past as well as visions for the future of wildland fire management. Past issues include thoughtful discussions on the role of fire (still a timely subject); on safety and training; and on ideas and procedures that were once new but are now commonplace. Too few of us remember, for example, when the Incident Command System replaced an older, already well-established terminology and set of procedures (see *National Interagency Incident Management System* in the index in this issue). Training is a recurring theme in many articles, and equipment of all types is by far the most common subject of articles in the past 30 years (table 1). With all the information available in 60 years of *Fire Management Today*, the problem is how to find articles in past issues that can help current fire managers solve today's management problems.

Why Build an Index?

In early 1998, while I was researching an article, I was frustrated by my inability to find something I knew I had read in an issue of *Fire Management Notes*, the predecessor of *Fire Management Today*. I could not find the article I was looking for in my own set of past issues or in the incomplete set at a nearby university library. Further checking showed that the most recent long index for *Fire Management Today* ended in 1969—no help to me in finding the article. An index covering the timespan since 1969 seemed long overdue.

It was fun to read about some of the "hot topics" from the past and compare predictions from 20 years ago with our reality today.

Using my own set of past issues, I built a data base of articles to help with my research. Donna Paananen, then editor of *Fire Management Today*, encouraged me to continue the index for inclusion in the 60th volume of the journal in the year 2000. Once started, the index was hard to quit. I borrowed issues I did not have from the Firebase collection at the National Interagency Fire Center (NIFC) in Boise, ID, where I was working at the time; and April Baily, the general manager of *Fire Management Today*, loaned me several volumes from the collection she maintains in the USDA Forest Service's Washington Office.

I reviewed 1,416 articles written by 984 authors over a 30-year period. It was fun to read about some of the "hot topics" from the past and compare predictions from 20 years ago with our reality today. I rediscovered articles written by people I've known, and I gained a new appreciation for the many articles that are still applicable to the challenges of today. In the process, I compiled a subject index with approximately 4,100 entries, or about 3 entries per article (see sidebar).

Surprises

After compiling the index, I made several surprising or interesting discoveries:

Facts About the 30-Year Index

- Timespan: 1970–99 (volumes 31–59)
- Number of articles: 1,416
- Number of entries: ca. 4,100, or about 3 per article
- Number of articles that appear only once: ca. 340
- Number of major subject headings: 57 (see table 1)
- Number of authors: 984 (authors who used different versions of their names were counted separately for each version)
- Percentage of authors who contributed only once: ca. 74 percent

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I expected to find the discussions on the role of fire in wildlands dated, but instead I found such discussions germane, whether published 30 years ago or in the most recent issue.

- The number of subjects covered in *Fire Management Today* was much larger and more evenly distributed than expected (table 1; fig. 1). I started with only 30 subjects and ended with 57 major subjects and 700 subtopics. The broad subject matter reflects the journal's success in serving the entire wildland fire community.
- The overwhelming majority of authors (74 percent) contributed only once to *Fire Management Today*, and the percentage who contributed more than a few times is negligible. Instead of being dominated by a small group of contributors, the journal has lived up to the expectations of its founders, including Roy Headley (1936), that it would become a broad clearinghouse of ideas from many different parts of the wildland fire community.
- Despite its origins as a journal on the technique of fire control (Headley 1936), *Fire Management Today* has published only 26 articles in the last 30 years that describe specific instances of fire behavior and weather in sufficient detail for current wildland fire managers to learn from the events (see index, *Fire Behavior: Case Studies* and *Weather: Case Studies*). More such studies are needed to help

Table 1—*Number of articles by subject in* Fire Management Today, *volumes 31–59 (1970–99).*

Subject[a]	Volumes			
	31–39	40–49	50–59	31–59
Agency, Federal	6	19	10	35
Agency, State	3	18	19	40
Art	4	6	18	28
Aviation	48	60	78	186
Communication	13	15	29	57
Conferences and Meetings	7	11	17	35
Contracts	0	2	3	5
Cooperation	27	79	111	217
Danger Rating	19	18	7	44
Detection	14	12	23	49
Dispatch	16	7	1	24
Economics	1	11	2	14
Ecosystem Management	8	8	37	53
Equipment	152	159	122	433
Facilities	11	16	4	31
Federal Property on Loan	2	15	18	35
Fire Behavior	17	44	32	93
Fire Cause	23	21	4	48
Fire Ecology	3	2	7	12
Fire Effects	2	17	13	32
Fire History	20	23	18	61
Fire Management	8	9	6	23
Fire Management Today	18	25	17	60
Fire Statistics	17	9	5	31
Fuels	33	51	40	124
Geographic Area	105	140	98	343
Health and Fitness	9	4	8	21
History	6	30	29	65
Information Systems	23	38	67	128
Law Enforcement	1	6	3	10
Media	0	0	3	3
National Interagency Fire Center	6	3	1	10
National Interagency Incident Management System	1	31	4	36
National Shared Forces	2	0	3	5
National Wildfire Coordinating Group	3	12	1	16
Organization	2	3	2	7
Personnel	17	52	99	168
Planning	28	39	64	131
Policy	3	14	20	37
Preparedness	4	68	34	106
Prescribed Fire Use	20	55	33	108
Prevention	52	68	121	241
Publications	45	56	19	120
Research	9	27	3	39
Safety	13	71	127	211
Severity and Seasons	7	8	0	15
Smoke and Air Quality	4	6	1	11
Suppression	57	114	82	253
Telecommunications	8	15	2	25
Terminology	2	3	1	6
Training	30	88	66	184
Vegetation	6	15	8	29
Weather	33	41	33	107
Wilderness	2	8	5	15
Wildland Fire Use	6	7	5	18
Wildland–Urban Interface	3	17	35	55
Wildlife	2	3	3	8

a. Primary subject headings in the 30-year index in this issue of *Fire Management Today*.

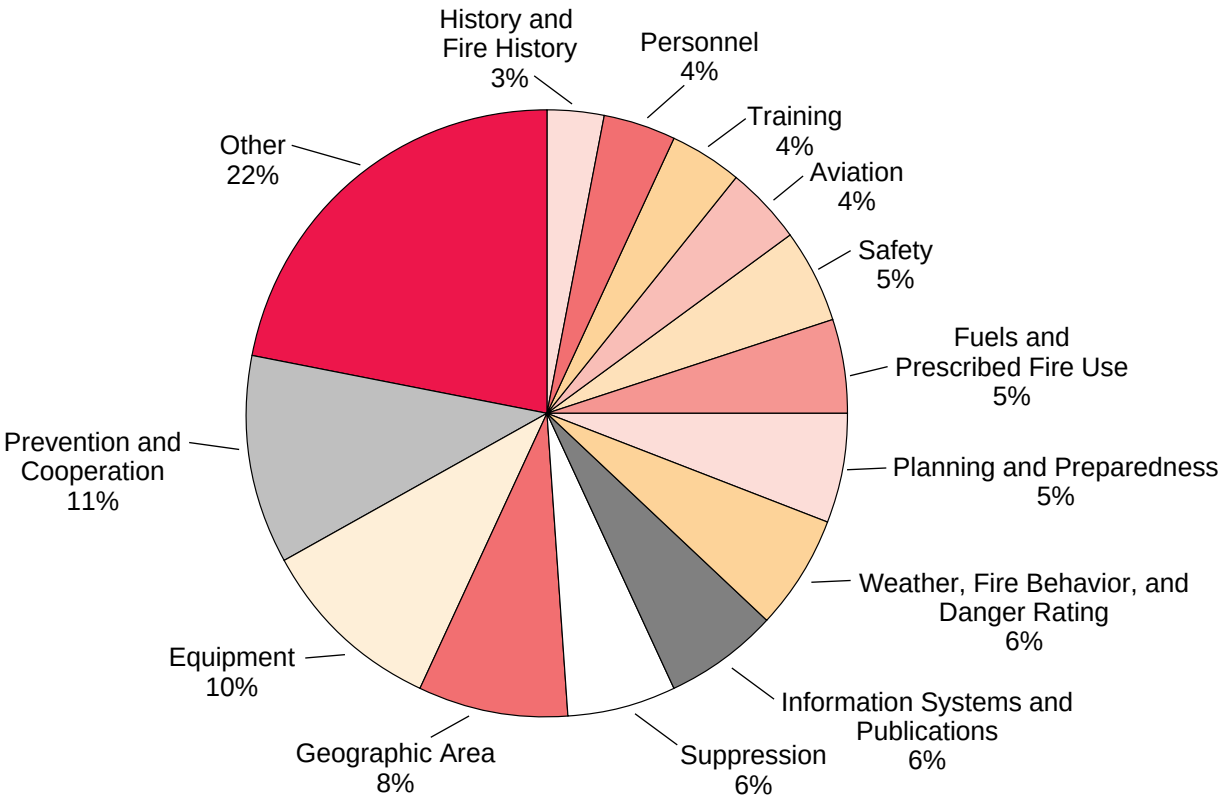

Figure 1—*Proportion of articles by subject in* Fire Management Today, *volumes 31–59 (1970–99), based on primary subject headings in the 30-year index in this issue. "Other" includes subjects with less than 100 entries (see table 1). Articles cover a wide range of subjects, reflecting the journal's commitment to serving the entire wildland fire community.*

fire managers learn from past successes and mistakes.

- Very few articles detail the events and lessons learned from fatalities and entrapments (see index, *Safety: Accident Investigation*). These tragic events are generally well documented in agency investigation reports, but those reports are not widely distributed to libraries. Articles in *Fire Management Notes* that summarize the events and lessons learned can benefit fire managers for many years.
- Traditionally, the most common subject of articles in *Fire Management Today* has been new equipment and ways to use it more effectively. However, the number of equipment articles has decreased in the last 10 years (table 1), probably because there are now other ways to share information on equipment.
- Discussions on the role of fire in wildlands, whether published 30 years ago or in the most recent issue, are still germane. I expected to find some of the discussions dated but instead found the opposite. We know more now than in 1936, but there is still much to learn and discuss.
- Agencies in the U.S. Department of the Interior (USDI) contributed very few articles about their particular policies and programs (see index, *Agency, Federal*). Several articles discuss issues facing the Bureau of Land Management and especially the National Park Service (NPS), but none specifically address fire management by the Bureau of Indian Affairs or the U.S. Fish and Wildlife Service (FWS). The USDI agencies face different issues than the Forest Service, and the FWS and NPS in particular have extensive experience with prescribed fire. Sharing that experience through *Fire Management Today* would be invaluable for readers.
- Very few recent articles describe techniques, tactics, and special needs in other countries (see index, *Geographic Area*). Some nations regularly experience fires that exceed 50,000 acres (20,000 ha), and we can learn much from their experiences.

The Future

Fire Management Today appears healthy and strong. The call by Roy Headley (1936) in the first issue of *Fire Control Notes* for the journal to serve as a clearinghouse of ideas still resonates among wildland fire professionals. Fire managers continue to use the journal to share ideas and discuss issues.

But the journal will remain strong only as long as readers continue to submit articles on a wide spectrum of subjects. Your good ideas shared in print might help someone solve a critical problem. A good mix of articles of different lengths—from a single paragraph to many pages—provides lively reading and information we can all use to better manage wildland fire in the environment. Fire will always be with us, no matter how many resources we have. I look forward to reading *your* ideas.

Acknowledgments

The 30-year index (1970–99) in this issue would not have been possible without cooperation and help from several people. Each person provided the right help at the right time, a wonderful combination. Donna Paananen, the former editor of *Fire Management Today*, helped develop the anniversary issue concept and initial indexing rules, giving encouragement when the task seemed dauntingly large. The Firebase collection at NIFC provided more than 30 issues not readily available elsewhere. April Baily, the general manager of *Fire Management Today*, encouraged the work and graciously loaned several bound volumes of *Fire Control Notes* from the collection in the Forest Service's Washington Office. Hutch Brown, the current editor of *Fire Management Today*, answered many questions, checked entries, and greatly improved the final product. Wayne Eddy, a fire and engineering staff officer, Mt. Hood National Forest, OR, reviewed some index sections at a key time. My daughter Amanda helped proofread titles, author names, and page numbers. But my most special thanks go to my wife Gail, who not only helped with the proofreading, but also tolerated my many evenings in front of the computer screen working on the index. You judge whether the effort was worthwhile.

The number of subjects covered in *Fire Management Today* was much larger than expected, reflecting the journal's success in serving the entire wildland fire community.

Literature Cited

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Trends in Size and Design

Number of Pages

Since 1964, *Fire Management Today* has gradually expanded the length of its issues. Figure 2 shows the variation in total number of pages per volume from 1964 to 1999 (volumes 25–59).

- 1964–72 (volumes 25–33): 16 pages
- 1973–81 (volumes 34–42): 16–32 pages (20 pages typical)
- 1982–99 (volumes 43–59): 28–68 pages (36 pages typical)

Size of Pages

Over the years, the journal has gradually increased page size to include more illustrations and improve readability.

- 1936–63 (volumes 1–24): ca. 6 inches by 9 inches (15 cm × 23 cm)
- 1964–79 (volumes 25–40): ca. 7-1/2 inches by 10 inches (19 cm × 25 cm)
- 1980–99 (volumes 41–59): ca. 8-1/2 inches by 11 inches (22 cm × 28 cm)

Graphic Design

The journal's appearance, originally very plain, has steadily improved since 1964.

- 1936–63 (volumes 1–24): Most covers without illustrations; small photos and simple line drawings inside
- 1964–79 (volumes 25–40): Black-and-white cover designs; more versatile use of photos and illustrations inside
- 1980–93* (volumes 41–54): Increased use of line drawings, especially of Smokey Bear; first use of color; more versatile use of graphic design techniques (such as lines, shading, clip art, and white space)
- 1995–99 (volumes 55–59): Color cover designs; color photos and illustrations inside; larger print for improved readability; extensive use of graphic design techniques for a polished, professional appearance

* Publication of *Fire Management Today* was suspended in 1994 and resumed in 1995.

The journal will remain strong only as long as readers continue to submit articles on a wide spectrum of subjects. Your good ideas shared in print might help someone solve a critical problem.

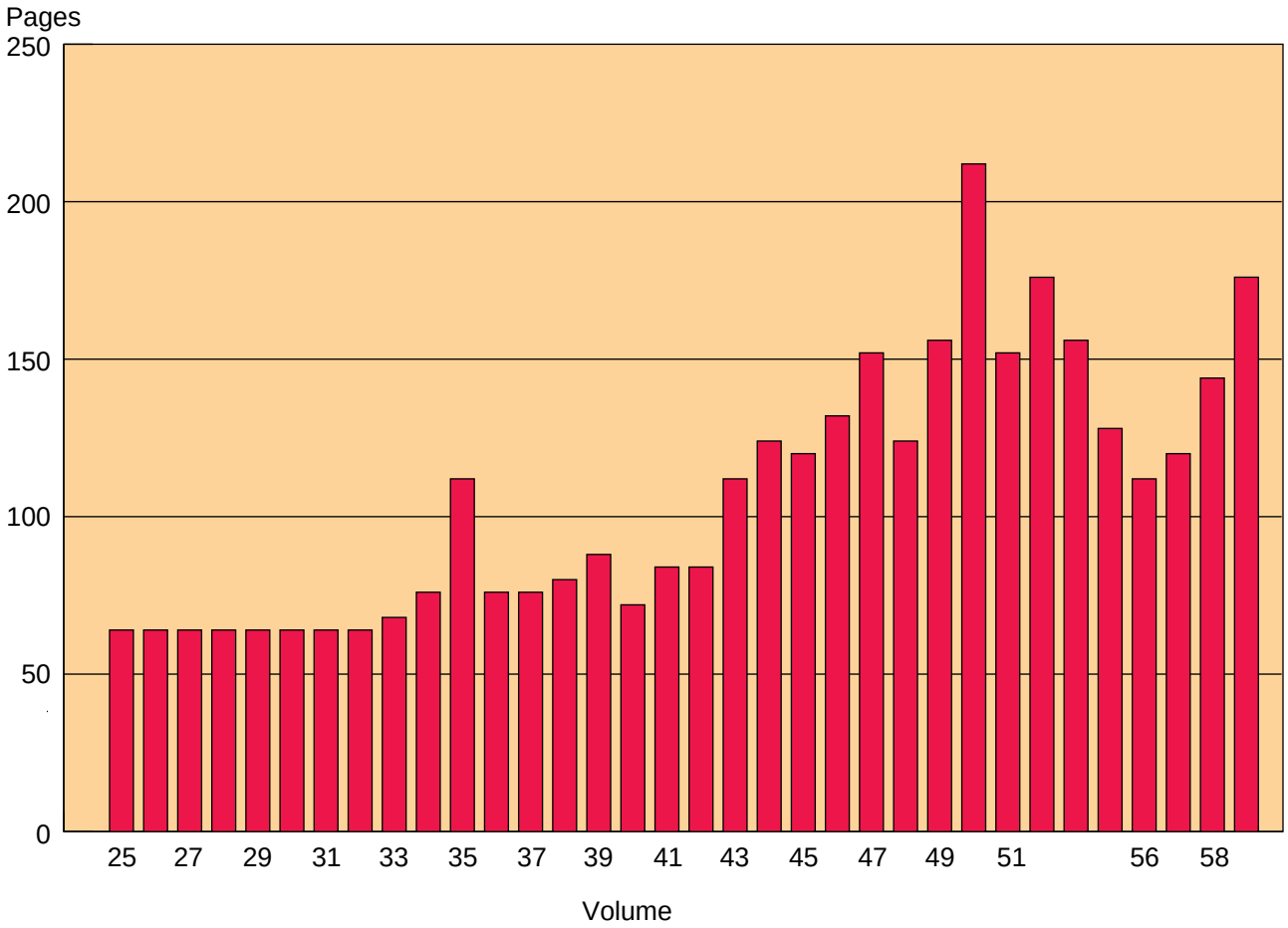

Figure 2—*Number of pages per volume of* Fire Management Today, *volumes 25–59 (1964–99). All volumes have four issues except for volume 53–54, which has five. The spike in page numbers for volume 50 (1989), due to the journal's extensive 50th-anniversary issues, dramatizes an upward trend. Since volume 25 (1964), the number of pages per issue has climbed from 16 to about 36, partly due to format changes to improve the journal's readability, such as the introduction of larger print in volume 55 (1995).*

Subject Index—Volumes 31–59*

Delvin R. Bunton

The index below covers all issues of *Fire Management Today* from 1970 through 1999 (volumes 31 through 59). The index uses three heading levels:

- Primary, set off by small capital letters (e.g., Aviation) and used for every entry;
- Secondary, set off from the primary heading by a rule and used for most entries; and
- Tertiary, set off from the secondary heading by a dash (e.g., Helicopters—Rappeling) and used for a few entries.

Headings are based on the latest standards for wildland fire terminology set by the National Wildfire Coordinating Group. Articles that use superseded terms are indexed under the corresponding current terms. For example, articles about "presuppression" are indexed under *Preparedness* and articles about "prescribed natural fire" are indexed under *Wildland Fire Use*.

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* An author index for *Fire Management Today*, volumes 31–59, is posted on the *Fire Management Today* Website at <http://www.fs.fed.us//fire/planning/firenote.htm>.

Agency, Federal:

General Services Administration

National Oceanic and Atmospheric Administration

U.S. Fire Administration

USDA Forest Service

USDI Bureau of Land Management

USDI National Park Service

Agency, State

Alaska

Arizona

Arkansas

California

AGENCY, STATE (continued):

ART

ART

Photography (continued)

A room (sometimes) with a view (always). Editor. 50(2): 29–33.
The way we were...in fire detection, on the line and in camp, in radio and telephone communications, and in transportation and support operations. Editor. 50(1): 24–30.
With a lot of help from a friend—The Civilian Conservation Corps. Doris Celarier. 50(3): 19–23.

AVIATION

Twenty-eight years of aviation in the Forest Service. Fred A. Fuchs. 50(2): 18–21.

Accidents and Incidents

Lessons learned in aviation safety. Dennis Hulbert. 58(4): 15–18.
One of our aircraft is down! Handling an aircraft crash on a fire. Gary Morgan. 58(4): 13–14.
Preliminary accident investigation checklist. Gary Morgan. 58(4): 14.

Aerial Ignition

Aerial ignition device. G.W. Hildreth. 46(3): 22–23.
After the terra torch, what's next? Ted Tveidt. 50(2): 34–36.
Airborne igniters for prescribed burning. Stephen S. Sackett. 36(2): 12–13.
Helitorch use in California. Denny Bungarz. 41(4): 15–17.
An improved helitorch design. James Tour. 47(4): 20–21.
Incendiary grenade dispenser evaluated in Alaska. Richard Ramberg. 34(2): 9, 13.
Mark III aerial ignition: A field perspective. John Fort. 52(2): 7–9.
North Carolina aerial ignition program. James F. Sain. 41(2): 13–14.
The plastic sphere dispenser aerial ignition system. James D. Lunsford. 47(3): 8–9.
Prescribed burning of chained redberry juniper community with a helitorch. Guy R. McPherson; Robert A. Masters; G. Allen Rasmussen. 46(4): 7–10.
Producing a prescribed crown fire in a subalpine forest with an aerial drip torch. P.M. Woodard; J.A. Bentz; T. Van Nest. 44(4): 24–28.

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FLIR: A promising tool for air attack supervisors. Charles W. George; Gerald F. Ewart; Walter C. Friauf. 50(4): 26–29.
Use of rotor-wing aircraft for air attack. Ray S. Page; Tom Beddow. 47(4): 29–31.

Aircraft Crews

Canadian air tanker and crew in South Carolina. Gloria Green. 51(3): 20–21.
Crew resource management enhances safety. Patrick R. Veillette. 58(4): 22–25.
Data base approach to current listing of approved aircraft and pilots. E.L. Corpe; John R. Allen. 41(3): 15–18.

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Airspace coordination during Florida's 1998 wildfires. Julie Stewart. 59(1): 13–15.
Federal aviation regulation governing temporary flight restrictions for wildland fire aviation. Julie Stewart. 59(1): 15.
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The 1988 Greater Yellowstone Area fires—along with many others—We were there. Editor. 50(1): 33–36.
The Aerial Firefighting Industry Association: History and accomplishments. William R. Broadwell. 58(4): 8–9.
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SUPPRESSION

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