

**M**issouri's natural communities have been shaped by humans and wildland fires for thousands of years. In many ways, the history of fire in Missouri also is a history of human population, culture and migration. Fires caused by natural ignition, like lightning, are rare. Despite as many as 50 to 70 thunderstorm days per year, Conservation Department studies indicate that less than 1 percent of modern day fires are started naturally. Humans have been, and continue to be, the primary cause of most wildland fires in Missouri.

In Native American cultures, fire was a tool used to create conditions to benefit farming and hunting. In the distant past, people of the Mississippian culture settled the rich fertile bottom lands in Missouri. These permanent populations may have used wildland fires to clear land to enhance defense of their villages and to improve production of cultivated crops. Fruits, berries and many other natural foods flourish on sites where fires have burned.

Wildfires of direct human causes also may have resulted from wars, hunting techniques or even accidents. But for hundreds, if not thousands, of years the most important reason for deliberately setting fires has been to maintain grasslands by preventing the forest from taking over. Grasslands and savannahs provided food for bison, elk and deer. Even today, fire is used in many parts of the world to promote grassland for domestic cattle.

French Jesuits, such as Father Vivier, were the first to describe the Missouri landscape. In 1750, he writes, "... wherein trees are almost as thinly scattered as in our public promenades. This is partly due to the fact that the savages set fire to the prairies toward the end of autumn, when the grass is dry; the fire spreads everywhere and destroys most of the young trees." Later travelers, including Henry Rowe



Cross-sections of tree trunks provide a diary of growing conditions and unusual events, such as fire. The growth lobes of this specimen clearly indicate periodic fire damage.

# An Ozark Fire His

**Fire scars on trees reveal the history of human use of fire in the Ozarks.**



Mavis Dey

The stump (above) provided this cross-section detailing a growth history spanning over 200 years and several types of settlement.

1897  
1890  
1885  
1884

1877  
1870  
1855

SCOTCH-IRISH AMERICAN

DELAWARE

1846

SHAWNEE  
1823  
1815  
1812  
1806

CHEROKEE

1792  
1790  
1786

1780

OSAGE

1769  
1767

EXPANSION

1755  
1752  
1748

QUAPAW

1728  
1704

1696

torw

by Richard Guyette, Mavis Dey and Dan Dey

Schoolcraft, who traveled through the Ozarks in 1819, described a landscape of prairies, oak savannahs and oak-pine forests shaped by fire.

How can we know, other than through accounts of early explorers in the area, what the long-term relationship of man and fire has been? The story of humans and their use of the land can be deciphered by studying burn scars on living trees or old stumps and snags.

When a low to moderately intense surface fire burns a tree, a portion of the living tissue under the bark, known as the cambium, may be killed by the heat. This injury results in a scar on the growth ring of that year. Scientists can date fire scars to an exact calendar year by using a dendrochronological method called tree-ring dating.

Tree-ring dating identifies unique patterns of wide and narrow rings of growth in the wood created by variations in climate and growing conditions. The tree rings in wood and stumps of unknown age can be compared to known tree-ring patterns and, thus, any fire scar can be attributed to a specific year.

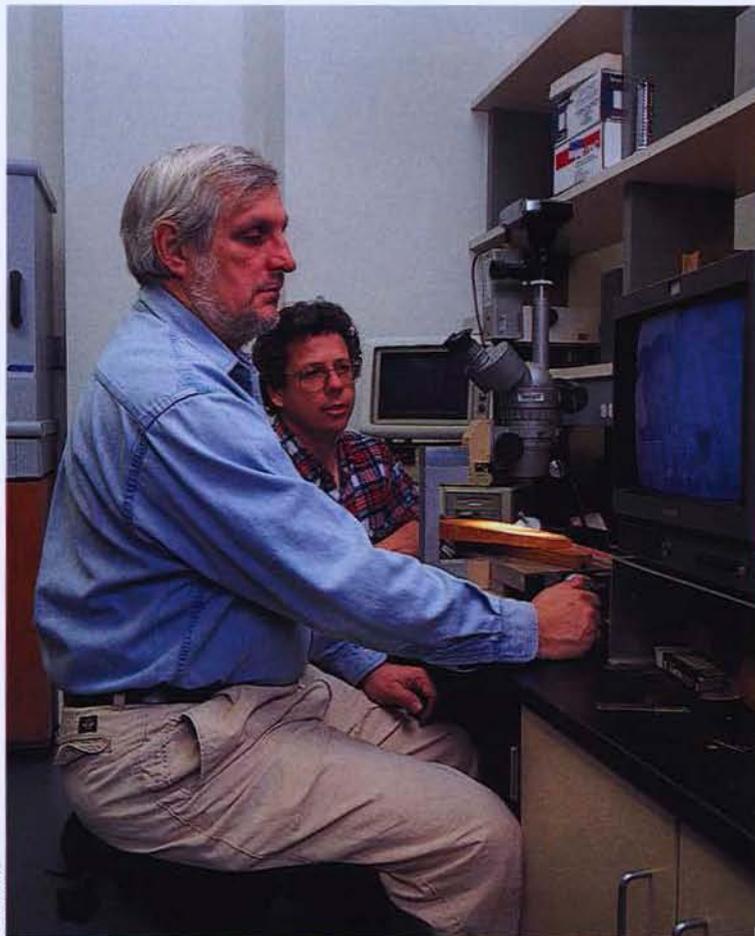
Some shortleaf pine stumps in the Missouri Ozarks have been preserved for centuries by resins—compounds produced by injured trees that protect wounds and prevent wood decay. The scars on these old stumps provide a record of wildland fire that dates as far back as the early 1600s.

Combining fire scar dates from several stumps and trees in a forest yields a fire scar chronology, or fire history, for that area. Fire histories can be compared with changes in vegetation, land use, wildlife, human population and culture to help us better understand how humans interact with the ecosystem.



Mavis Dey

Trees often survive fires, as this wound on a living shortleaf pine attests. Even fast-moving undergrowth fires will damage the outer cambium layer of a tree, leaving scars as a record of their occurrence.

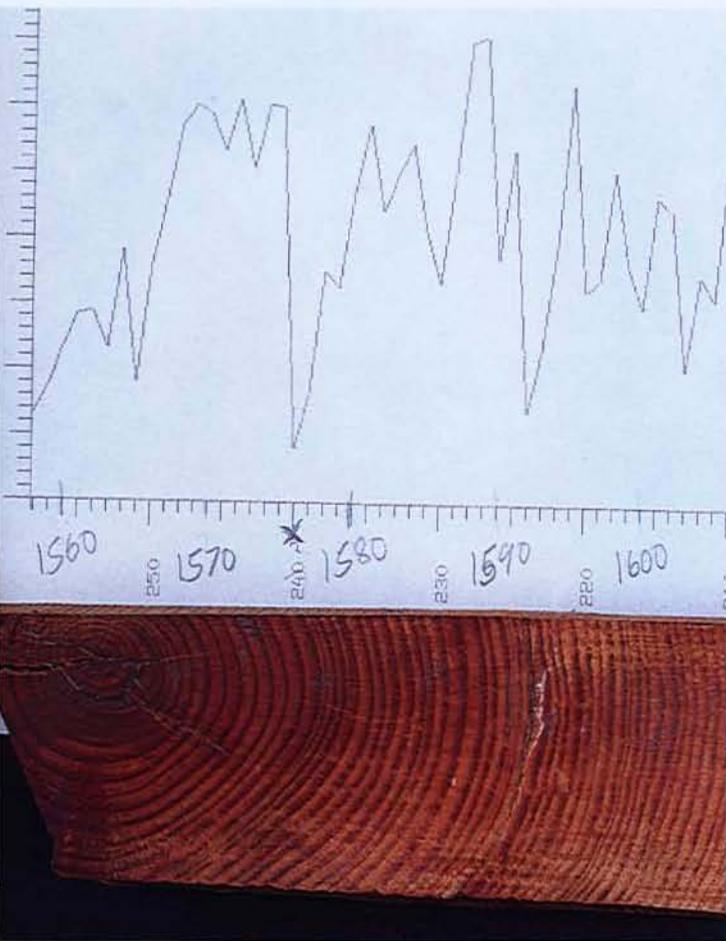


Cliff White

Site-specific fire histories developed in parts of the Missouri Ozarks reveal that human population and culture are closely linked to the frequency and intensity of fire over the last 400 years. Where population density was greater than one person per square mile, fires occurred every one to five years. In more sparsely populated areas, fires burned every 10 to 30 years on average.

**B**efore European settlement, widespread fires burned over large portions of the Ozarks. Fire scar data compiled from a number of different sites show that extensive fires occurred in 1728, 1753, 1772, 1777, 1780, 1795, and 1800. Extreme drought combined with fires set during Native American migrations and territorial conflicts set the stage for these conflagrations.

In 1780, for example, the drought conditions and the mass movement of Native Americans westward were of continental proportions. Fires burned almost 70 percent of 30 fire history sites in the eastern Ozarks. In the Current River watershed alone, hundreds of thousand of acres burned. A thousand miles northeast of Missouri, dated fire scars from pine stumps in the Algonquin Highlands of



southern Ontario show that in 1780 thousands of acres burned, as well.

Native American populations fluctuated in the 1700s and 1800s. The pattern of fires was, in turn, affected by these fluctuations. In the early period of recorded fire history, the Osage tribe dominated much of the Missouri Ozarks. Acquisition of horses gradually gave this tribe greater mobility to hunt, exploit and influence (by fire) a large area. Then, diseases introduced by Europeans decimated many Native American tribes and probably greatly influenced the frequency of fire in the Ozarks and in all of North America. Outbreaks of diseases in 1698, 1747 and 1751, for example, killed 80 percent of the Quapaw people southeast of the Ozarks.

Migrations of tribes pushed westward by Euro-American settlement of the eastern United States coincided with an increase once again in fire frequency between 1780 and 1820. Delaware, Shawnee, Cherokee and other tribes passed through Missouri during this period.

By the 1820s and 1830s, Euro-American settlers spreading westward had displaced most of the Native American population. Exponential increases in human population explain the increase in fire frequency from 1810 to 1850.

By comparing trees with overlapping life spans, researchers can compile a chronology of a region. Drought, population movements and population pressures all have contributed to Missouri's fire history.

The relatively high density of settlement was responsible for widespread burning in the rugged terrain of the Ozarks during this period.

Settlement also brought railways and a more modern overland road system in the late 19th century. Transition to a regional economy from the historically local form of commerce in the Ozarks brought about yet another chapter in fire history. Timber became increasingly valuable and, in 40 years or so, loggers had harvested most of the shortleaf pine and much of the better quality hardwood in the region.

The slash left from logging operations fueled major wildfires ignited by farmers trying to convert forest into pasture. Not only were human lives threatened and homes destroyed by the rampant wildfires, but frequent burns significantly decreased the value of the remaining timber. When Missourians finally realized this method of resource exploitation degraded the value of remaining forest, the cycle of how they used fire changed.

Timber, once worth little to the settlers, became quite valuable. Population density made wildland fires a serious hazard to life and property. In the late 1930s, the Conservation Department, U.S. Forest Service and rural fire protection organizations developed successful fire suppression programs to protect lives, timber, homes, buildings and other rural improvements.

Although there are still some localities in Missouri where frequent burns take place, the role that wildland fire plays in our ecosystems and natural communities has been substantially reduced. Today, prescribed fire (fire with a defined purpose) is being introduced into some of our wildlands to foster wildlife habitat, plant diversity, prairie restoration and timber production.

The judicious use of prescribed fire and the suppression of wildfires should result in a natural heritage as diverse in ecology and beauty as what the first explorers described. ▲

**Before European settlement, widespread fires burned over large portions of the Ozarks. Fire scar data compiled from a number of different sites show that extensive fires occurred in 1728, 1753, 1772, 1777, 1780, 1795, and 1800.**

## Dog-gone mistake hounds regulation summary

The 1999 Summary of Missouri Hunting and Trapping Regulations entry concerning the use of hunting dogs contains three extra—and incorrect—words.

The words “squirrels and rabbits” should not appear in the sentence on page 9 of the summary, which reads, “The hunting of furbearers, squirrels and rabbits with dogs during daylight hours is prohibited statewide from Nov. 1 through the close of the November portion of the firearms deer season . . .”

The prohibition applies only to the use of dogs for hunting furbearers—not squirrels and rabbits—during daylight statewide. In a previous sentence, the regulation summary correctly says that dogs may be used to hunt squirrels and rabbits during the daylight hours of firearms deer season except in Bollinger, Butler, Carter, Dent, Iron, Madison, Oregon, Reynolds, Ripley, Shannon and Wayne counties.

## Meet our Contributors



**Dan Dey** is a USDA Forest Service research forester with 19 years experience in forest management and research. **Mavis Dey** is a freelance writer and home-school mother of four children.



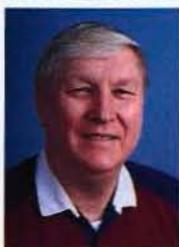
**Betty Grace** lives on a farm outside Albany, Mo., with her husband, Jim, and their children, Jacob, 9, and Anna, 4. They are a family of campers, traveling anywhere they can set up their tent. Betty has drawn a monthly cartoon for the *Conservationist* since 1986 and sometimes illustrates articles.

**Richard Guyette** is a research associate professor in forestry at the University of Missouri's School of Natural Resources. He studies tree rings to learn about forests, the environment, ecology and history. He lives with his wife and children in central Missouri. His hobbies are drawing and boiling maple sap into syrup.



**Paul Lamble** and his wife “nest” near Kansas City and are raising a brood of their own, looking forward to their first flights. They also maintain what he describes as a “40-acre tick farm” in Benton County. Paul has written for the *Conservationist* on such subjects as crows, hiking trails, mistletoe and urban deer.

**John McPherson** has been with the Conservation Department for 25 years. Since 1989, he has been working to acquire lake and stream areas and to develop boat accesses. He enjoys country living with his wife, Jeanne, and their two children, Jordan and Jayna, on a small farm near California, Mo.



**Stan Michaelson** has worked for the Conservation Department for 30 years. He currently is a fisheries field operations chief. He lives with his wife, Nancy, and three children on a small acreage near Jefferson City. When not remodeling or repairing their house, he enjoys fishing, waterfowl hunting, gardening and reading.



## Program Schedule

Television the way Nature intended!

- Branson** Vacation Channel / Fri. & Sat. 3:30 p.m.
- Brentwood** Brentwood City TV / Three times a week, check local listing for times
- Caruthersville** Lions Club TV / Saturdays 9 & 9:30 a.m.
- Columbia** Columbia Channel / Tues., Thurs. & Sat 2 a.m. & 2 p.m.
- Hannibal** KHQA / Saturdays 11 a.m.
- Hillsboro** JCTV / Mondays 12 noon
- Independence** Jones Intercable-Channel 16 / 2nd weekend of the month, check local listing for times
- Jefferson City** JCTV / Mon. 6 p.m. & Tues. 12 noon
- Joplin** KOZJ / Saturdays 4 p.m.
- Joplin** KGCS / Sundays 6 p.m.
- Mexico** Mex-TV / Sun., Fri. & Sat. 6:30 p.m.
- Perryville** PVTV / Mondays 6 p.m.
- St. Peters** St. Peters Govt. Access 7 / Sun. 10:30 a.m. & Tues. 6:30 p.m.
- Springfield** KOZK / Saturdays 4 p.m.
- Springfield** TCI / Six times a week, check local listing for times
- Warrensburg** KMOS / Thurs. 7:30 p.m. & Sat. 5 p.m.

# MISSOURI

## CONSERVATIONIST

March  
1999

Volume 60,  
Issue 3



# CONTENTS

March 1999  
Volume 60 Issue 3

## COVER

Where's dinner?

*Photographed by Jim Rathert*

## DEPARTMENTS

Reflections **2**

News & Almanac **28**

## AN OZARK FIRE HISTORY **4**

—Richard Guyette,  
Mavis Dey and Dan Dey  
Fires, many of them set  
by people, have shaped  
Missouri's landscape



## ARCHITECTS OF THE AIR **8**

—Paul Lamble  
Detailing the fascinating creations of nesting birds

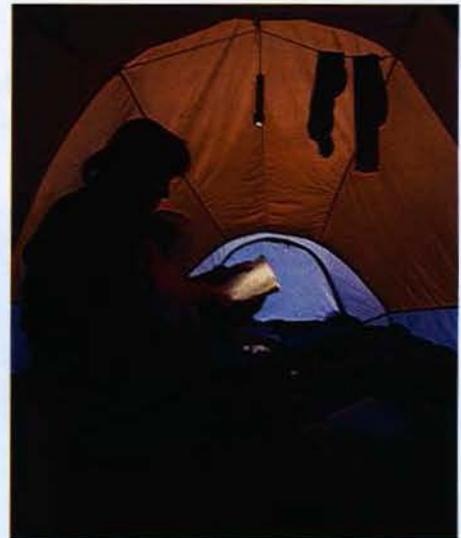


## THE FISH WITH THE UNDERNEATH EYE **14**

—Stan Michaelson  
Bighead carp present a  
new challenge to anglers

## OPEN DOORS TO LAKE OF THE OZARKS **17**

—John McPherson  
It's all about access, Conservation  
Department accesses, that is



## HAPPY CAMPERS **20**

—Betty Grace  
Kids and camping go together  
like cake and ice cream

## WORKSHOPS FOR TEACHERS **25**

A bevy of opportunities for  
teachers to learn about nature



Contact Us

**Web page:** <http://www.conservation.state.mo.us> **Subscriptions:** free to adult Missouri residents; out of state \$7 per year; out of country \$10 per year. Send correspondence to Circulation, P.O. Box 180, Jefferson City, MO 65102-0180. **Phone:** 573/751-4115