

Much of Montana is now green and lush, but the lingering drought continues to plague many fish and wildlife populations

BY ANDREW MCKEAN

BOAT DOCKS AT Canyon Ferry Reservoir are floating for the first time in years, ducks are dabbling in full ponds across the state's prairie pothole region, and spring rains have made much of southeastern Montana look like Ireland.

Looks like the state's drought is finally over, right?

Not so fast.

Though it may be green and lush where you live, much of Montana is still parched from a long-term drought. The Beaverhead River is still chronically low, biologists blame drought for a recent plummet in the brown trout population on the Bighorn River, and ground moisture in the Billings area remains at Dust Bowl-era levels. Even in areas of Montana where the rivers run high and pastures are knee-deep in grass, drought continues below the surface.

"Many parts of Montana have had four or more years of drought, sometimes severe drought, so even if we return to normal or above-normal precipitation, it will still

take several years to restore aquifers, reservoirs, and subsoil," says Rick Bondy, an engineer for the Water Resources Division of the state Department of Natural Resources and Conservation.

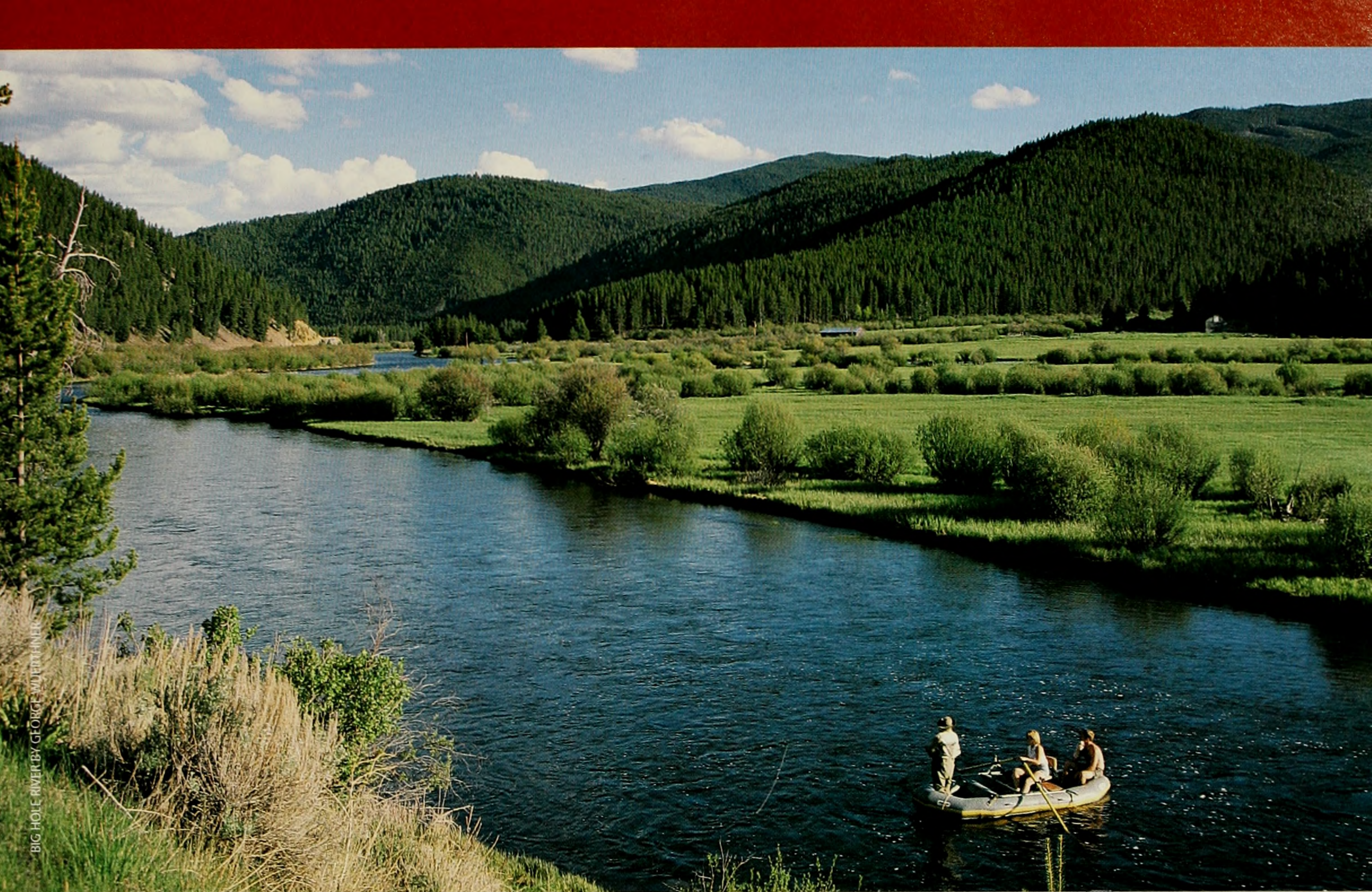
Montana FWP officials say that even though near-normal snowpacks and rains have returned to some areas, the long-term effects of this latest drought cycle will harm many fish and wildlife populations and their habitats for years to come.

Low water on some streams has hampered trout reproduction, meaning that entire year classes, or generations, of fish have been lost. Elk and deer stressed by drought may not have died outright, but many may be weaker and more susceptible to stress and disease than if grasses had been greener and more nutritious.

How bad has Montana's drought been in some areas? So bad that instead of boats floating down some

Dry

NOT SO FAST: Recent rains have made some parts of Montana look greener than they have in years. But biologists and climatologists warn that the precipitation hasn't erased the long-term effects of the most recent drought on soil, rivers, and the state's fish and wildlife.



BIG HOLE RIVER BY GEORGE WIRTHNER

beneath the surface

ivers, pickups have been driving upstream.

That was the case just two years ago on the Smith River, where the summer-long recreational floating season was cut to just one month due to low flows. The central Montana river actually disappeared in certain reaches during late summer.

“In 2000, and again in 2001, the lower Smith dried up completely at Eden Bridge,” says Joe O’Neill, FWP manager of the Smith River recreation corridor. “We had a number of people illegally driving up the riverbed in ATVs and four-wheel-drive pickups.”

Though the Montana Drought Advisory Committee has reduced its drought declaration for some soggy counties, dry soil and low water tables still plague many parts of the state. As of June, the areas of greatest concern were the Beaverhead system, the Musselshell and Tongue basins, the Yellowstone River downstream of Bighorn,

the Kalispell area, and the Sun and Upper Marias basins in the north-central region.

Dry rivers, parched prairies, burning forests. While drought is still the talk of many coffee shops and sale barns across the state, it’s difficult to quantify the depth of the damage. Ranchers still fret about thirsty pastures, and irrigators worry about paltry snowpack. Suburbanites grumble about water restrictions, and boaters keep their eyes peeled for prop-eating rocks that jut unexpectedly from the water.

Assistance programs can help people weather the worst weather. But it’s a different story for many fish and wildlife species that must survive drought on their own. For example, dry years force elk to move constantly in search of green grasses and forbs.

“Drought causes an energy drain on elk throughout the year,” says Gary Hammond, FWP wildlife biologist at Dillon, “but the problem is particularly bad during the spring

calving season, when cows have high energy demands from their pregnancy and lactating.”

Hammond says stress on cow elk reduces calf weight and survival. In his area, the number of elk calves born in recent years has been 30 to 50 percent of what he would expect it to be.

Drought hits fish even harder. Species that require specific water levels or flows to reproduce, such as arctic grayling and cutthroat trout, are declining in number due to low water.

“Fish species need more than just a trickle to survive,” says Kathleen Williams, manager of the FWP Fisheries Division’s Water Resources Program. “Take paddlefish. They need a big surge of water to trigger their spawning. Without that, we just don’t see much in the way of reproduction.”

The effects to fish are most acute on Montana’s smaller rivers. FWP fisheries biologist Joel Tohtz has been watching with

concern as the trout and minnow populations in the Shields River have continued to shrink. The stream's feeble flow, used for irrigation, was further restricted by years of sub-normal snowpack in the Crazy Mountains. In some reaches last summer, the south-central Montana river stopped flowing entirely, says Tohtz. Instead of a stream, it existed as isolated pools of warm water between expanses of sun-baked river rock.

"The Shields is a stream that's chronically dewatered," says Tohtz, who works in Livingston.

Tohtz says the river's habitat has been damaged due to channelization, deposition, riprap, and blown-out banks. Despite the habitat degradation, the fishery can sustain itself if the Shields has adequate water flow.

"But when the flows are reduced past a certain point," he says, "then the fishery just collapses."

In central Montana, the Musselshell River disappeared in several reaches during the past three years, temporarily dooming its popular brown trout and smallmouth bass fisheries.

Fisheries in reservoirs aren't immune from the effects of drought, either. Mike Ruggles, the FWP biologist who manages Fort Peck Reservoir, says he is concerned that the declining water level will expose shoreline spawning habitat used by spottail and emerald shiners. Without this important forage fish, the reservoir's popular walleyes will prey on each other and eventually starve to death.

Ruggles also points out that continued low water makes it difficult for FWP to collect enough eggs from wild walleyes to rear at the Miles City warmwater hatchery and then stock back into the reservoir.

Drought has also hammered the state's coldwater hatchery program. Gary Bertellotti, FWP hatchery supervisor, says a lack

BROWN RIBBON

FISHERY: Though it is flowing today, the Musselshell River has been without water in many stretches during the past few years. The return of water doesn't necessarily mean the return of fish, however. Many bass or trout either moved far downstream or died.

GARY LEPPART



of rain and snow has meant reduced groundwater supply, fewer eggs, and fewer brood stock fish. Added to that is increased demand by biologists statewide to stock pond and reservoir fisheries suffering fish kills from the drought.

"The hatcheries are really struggling now to stock more and larger fish to recover fisheries that have either been reduced or totally wiped out by drought," he says.

Bertellotti adds that drought was probably responsible for bacterial kidney disease detected this spring at the Big Springs hatchery in Lewistown, which forced FWP to destroy roughly 100,000 rainbow trout and arctic grayling. The disease likely broke out in the wild brood stock because they were stressed from low water and high temperatures, he says.

DROUGHT DEFINED

Much of Montana is suffering from its fourth or fifth consecutive year of drought. Despite scattered rains in some places this spring, most of the state was classified by federal climatologists *at best* as "abnormally dry" in June, and much of the state's central and southern region remained classified as "severe drought."

The intensity of the drought varies by

location, says Gina Loss, a hydrologist with the National Weather Service in Great Falls.

"It's misleading to say that the whole state of Montana is in drought," says Loss. "There's a band of what is defined as severe drought from the east slope of the Rockies southeastward to Carter County and also in the southwest. But you have other areas of the state that are in good shape. Much of northeastern Montana is doing okay."

If it's difficult to characterize the state as a whole, it's also hard to pinpoint consistent definitions of drought. It's not simply a shortage of precipitation, says Loss. For example, one county may be in drought in terms of groundwater supplies or river flows, but not in terms of effects on agricultural crops.

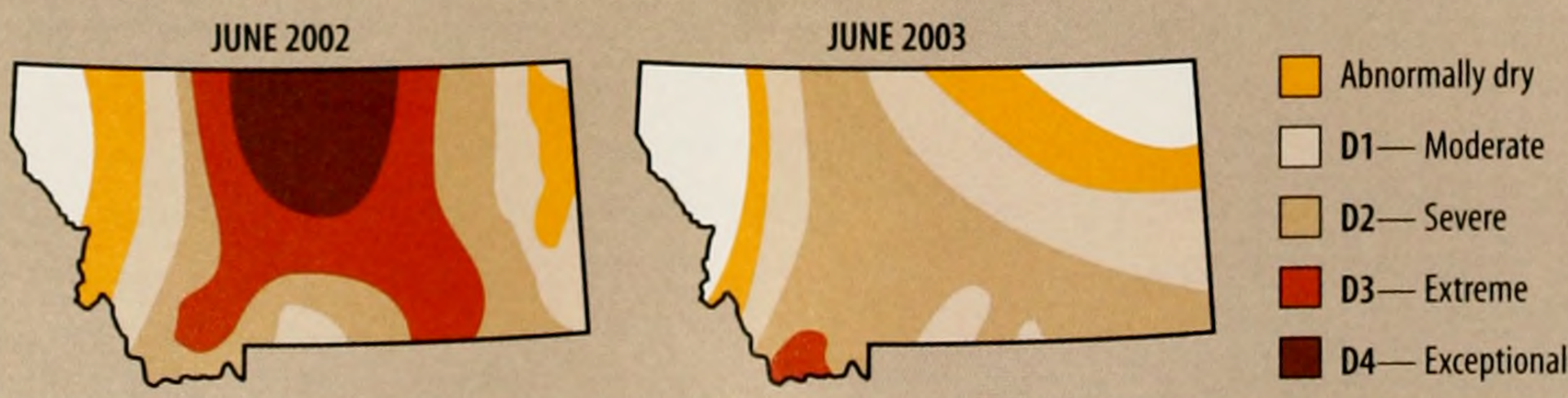
No matter how you define drought, it obviously affects fish when a river section dries up. But it also can cause delayed reactions, which can create a management dilemma on certain popular sport fisheries. Tohtz says a trout that goes into the winter in poor shape from the summer's high water temperatures and low flows may have trouble surviving until spring. Add to that the effects of being caught by anglers, and the stress can be enough to kill the weakened fish.

"Anglers on the Yellowstone River are good about restricting fishing when the temps are high and flows are low in the summer," Tohtz says, "but as soon as the river cools, the crowd is back and everybody thinks things are okay." Efforts to curtail fishing when water conditions appear fine are met with less enthusiasm than

Andrew McKean is an FWP information officer at Glasgow.

Not as dry as 2002, but not exactly wet, either

These maps, based on federal data, show that Montana's drought has improved substantially since last year. But drought (D) still affected much of the state as of June.



MONTANA OUTDOORS

when water is low, he says.

Why doesn't FWP just stock trout to replace those killed by drought? According to Williams, research in the early 1970s showed that stocking can actually harm existing wild trout populations.

"After a drought cycles through a stream system, it takes several years of favorable flow conditions before the naturally reproducing populations can repopulate," she says. "We can't speed that up by stocking hatchery fish."

LONG-TERM DAMAGE

Like trout, mule deer and antelope can also exhibit a delayed reaction to drought.

"Big-game animals that depend solely on native forage are certainly affected by drought, but sometimes it's not immediately noticeable," says Pat Gunderson, FWP wildlife biologist at Glasgow. "Poor forage can cause long-term deterioration of their physical condition, which usually isn't immediately fatal but can affect wildlife populations once we get a harsh winter."

He says drought reduces the availability of late-summer forbs needed by grazing wildlife to prepare for the colder months ahead. The effects can be especially hard on antelope and deer fawns.

"If quality forage dries up before the lactation period is over, the fawns will be in poor condition entering the winter," he says. "And if it's a tough winter, many of them won't make it."

So far, Montana's deer and antelope numbers have remained stable statewide despite the lack of water. But FWP is keeping an eye on the populations and will adjust hunting regulations if numbers drop due to delayed effects of dry weather.

Though they can't make rain, FWP biologists have taken steps to reduce the state's vulnerability to drought.

"What we're doing is recognizing the fact that these dry cycles are inevitable and trying to offset the effects of drought whenever possible," says Williams. Among the agency's drought-related efforts:

- Promoting water conservation.
- Restricting angling and other uses on some rivers when flows drop or temperatures rise to certain thresholds.
- Working with reservoir operators on releasing water at levels that benefit down-

stream fish populations.

- Working with irrigators to line ditches, convert to more efficient watering systems, switch to wells for livestock watering, and lease available water rights to FWP to retain in streams. "Many irrigators have tried hard to keep streams flowing, despite the hardship it brings," says Williams. "That doesn't get recognized a lot."

Another point biologists make about drought is that some species, especially prolific upland birds, are able to bounce back quickly. That appears to be the conclusion of a study of radio-tagged sage grouse in north-central Montana, where nesting success and chick survival spiked shortly after timely rains in 2002.

"Sage grouse and sharptails have evolved in this arid climate," says Gunderson. "Even during these most recent drought conditions, they seem to be able to handle it."

That's not to say upland birds can't perish during extremely dry or hot weather.

"During one especially hot summer, we saw sharptail chicks baked in their eggs before they could hatch," Gunderson says.

Because sharptails reproduce in high numbers, even hard-hit populations can rebound once temperatures cool and rains return.

That's even more true for waterfowl. During the past several years, many prairie potholes in northeastern Montana disappeared. As the wetlands shrank in size and number, duck production plunged. The U.S. Fish and Wildlife Service last year blamed the persistent drought in the Great Plains of the United States and Canada for the worst ever fall flight of pintails.

Gunderson says spring rains have since filled many northeastern Montana potholes, most noticeably in southern Phillips County, a key area for waterfowl production. Resident duck numbers this fall should increase accordingly.

If even rainless clouds have silver linings, the one good thing about this drought—lingering in many areas, dissipating in others—

BOUNCING BACK: Recent rains and normal snowpack spell relief for fish and wildlife in many counties. Species such as mule deer that have evolved on the prairie will quickly recover from this drought—and the inevitable next one.



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is that it's a reminder that dry skies are normal for this region. Native prairie species—including native eastern Montanans—have evolved with regular, periodic drought, and a lack of water accounts in large part for their ruggedness and resiliency. In much of the Great Plains, drought is simply the natural order of things.

"Most of the state east of the Continental Divide is semiarid," says Williams. "A drought is really just one small step beyond that. It's not an unforeseen disaster. We know drought will return, and probably sooner than later. That means we can now take steps, such as reducing water use, to lessen our vulnerability to the next drought." 🐾