America's been drained for more than 200 years. Here's how you can help restore a bit of wetland in your own backyard—or at school.

Joining the Wetlands

Story and Photos
By Joe McFarland

For such an upbeat man with a positive message, Tom Biebighauser sounded almost out of character as he described the fate of pesky mosquitoes entering one of his ephemeral wetlands.

"They check in," the biologist smiled calmly, pausing for dramatic effect, "but they do not check out."

A healthy ephemeral wetland works like that. When it comes to the issue of mosquitoes, those seasonally wet depressions of earth called vernal pools or ephemeral wetlands can actually reduce the local mosquito population. Waters seemingly ripe for reproduction lure mosquitoes to their ultimate death.

Of course, many skeptics remain unconvinced. But during workshops around the Midwest, this U.S. Forest Service wildlife biologist escorts nonbelievers outdoors to demonstrate the effect.

"I take people out to wetlands we've built and nobody has to wear mosquito repellent," Biebighauser explained proudly. "We'll be taking water samples and I'll stop and ask, 'Who's had to slap a mosquito so far?' Nobody does. It really surprises people."

How is it possible? We all know mosquitoes breed unchecked in standing water without predators. Ephemeral ponds, also called vernal ponds, are different. Mosquitoes might get lured to lay eggs in a shallow wetland, but the multitude of hungry salamander tadpoles, water insects and other mosquito predators soon devour the larval specks like candy. The result is what ecologists call a "sink," where species go to breed but lose everything to predators, resulting in a net population loss.

Those mosquitoes we slap during backyard picnics? The water in your gutter or old buckets—places where wetland predators don't exist—that's where your mosquito problems originate.

Biebighauser's campaign isn't simply anti-mosquito; it's pro wetland, specifically, those shallow, ephemeral ponds that fill up during rainy springs and dry out sometime later. Americans have been draining such habitat for more than 200 years, and the loss to wetland-dependent wildlife has been enormous.

Good news: Almost anyone in America can build some kind of wetland to reverse the trend. Biebighauser's message is to start small—very small—if space is limited.

"An ephemeral wetland doesn't have to be 1,000 acres to be effective," the biologist said. "It can be as small as your desk. The important thing is that it holds water and isn't so deep that fish can survive—it should dry up by midsummer."

Revival

Wetlands expert Tom Biebighauser explains how basic survey equipment can be used to establish the proper elevations within seasonal wetlands.

What benefits from such brief inundation? An array of amphibians including salamanders and frogs seek out these precise spots. They prefer to begin life in shallow pools which do not contain fish (fish gobble up eggs and tadpoles, reducing reproductive success). By the time the shallow waters evaporate, the creatures have crawled away to continue their life on land.

Reading material

Biebighauser has produced a book, "Wetland Drainage, Restoration and Repair," available from the University Press of Kentucky at www.kentuckypress.com/viewbook.cfm?Category_ID=1&Group=197&ID=1396.

For amphibian populations in decline, these relatively safe rearing ponds can make a local difference, explained Department of Natural Resources Restoration Ecologist Terry Esker, who has helped construct scores of these seasonal wetlands in the Prairie State.

"These types of habitats have suffered great losses over the years," Esker said, adding that the loss doesn't have to be permanent—or difficult to reverse. "People can build some of these with a shovel."

"The key to these vernal ponds is the depth," Esker said. "Fifteen to 20 inches is ideal."

A proper guide for construction of these types of wetlands—everything from field-size shallows requiring heavy equipment, to puddle-size depressions in the backyard—can be downloaded at: www.kypride.org/educators/wetlands/VernalPondGuide.php.

The Web site contains Biebighauser's "A Guide to Creating Vernal Ponds," of which 30,000 booklet versions have been distributed so far. In it, the Kentucky biologist covers the essentials to successful vernal pond creation while steering people away from common mistakes, as well as offering workable solutions.

Realize that a plastic liner might be needed to hold water in well-drained soils unless the site has been extensively excavated and compacted with heavy equipment. A common troublemaker is the crayfish tunnel, which can reach depths of more than a dozen feet and act as hard-to-fix drain holes in a wetland. One tip: Since crayfish dig until they reach water, visible water in a crayfish hole suggests the soil might be appropriate for wetland construction without having to add a liner.

Biebighauser has successfully built vernal ponds in his home state with the cooperation of private landowners, businesses and many school districts—often right on school property.

"They're great environmental workshops," Biebighauser said of the educational opportunity. "With limited budgets, this is one way for schools to offer science field trips without having to travel. The field trip comes to the school."