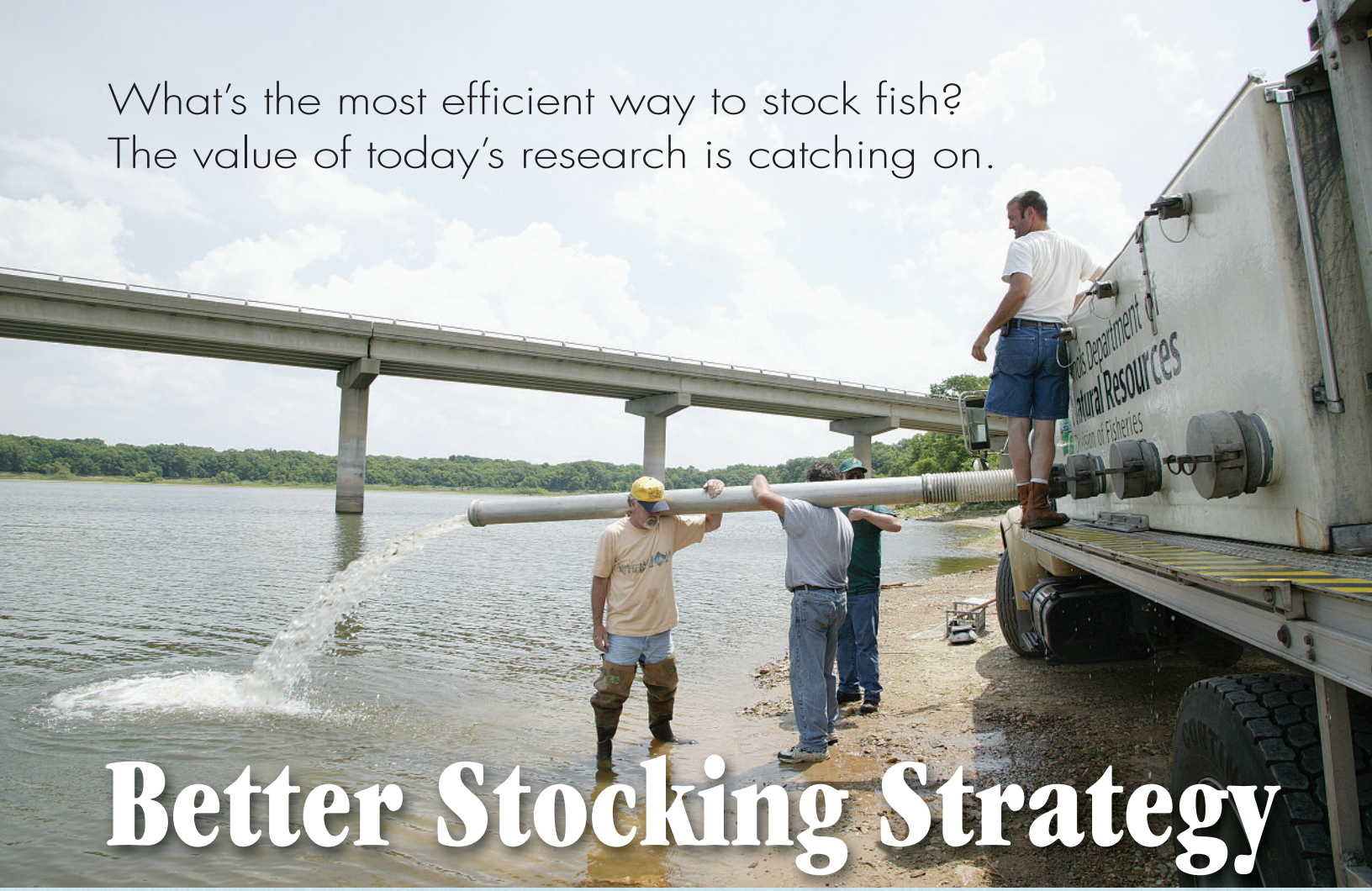
What's the most efficient way to stock fish? The value of today's research is catching on.



Better Stocking Strategy

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Americans have been stocking fish into lakes and rivers for ages, hoping to introduce new species or simply to improve existing populations of game fish. Years ago, wherever a lake existed, somebody—often a well-meaning fisherman—invariably would dump a bucket filled with fish into the lake and wait.

Sometimes the stocked fish would multiply and thrive, creating a productive fishery. But usually not. Often times these primitive efforts would actually harm a fishery by introducing the wrong mix of species, or the wrong predator fish. Sometimes, exotic species were hauled in from afar—usually with disastrous results (think mud-died-up lakes filled with common carp, or, more recently, the dangerous, jumping Asian carp overpopulating the Mississippi and Illinois rivers).

When America's fish hatcheries were being built in the late 19th century, little was known about how one should properly stock a lake or river. How many stocked fish were enough? How big should the stocked fish be? Could weak populations be improved simply by stocking—dumping more fish into the lake or river?

A hatchery in 1908 might send a train car filled with many thousands of small trout, bass or walleye to some distant lake, release the fish, then discover the lake could not support those species. Eventually, trial and error brought better results, but the science of stocking still begged questions.

Today, fisheries managers continue to ask questions, auditing the results of

New fish-rearing ponds and raceways constructed near Lake Shelbyville provide an on-site resource for stocks of multiple species of fish.

Specially equipped trucks (left) transport fingerlings directly to the shores of Lake Shelbyville. DNR Fisheries Technician Nate Goetten (above) adds fingerlings to the truck after weighing to estimate quantity.

what would otherwise appear to be tried-and-true methods for stocking fish. The fact is, raising and stocking fish into Illinois lakes and rivers costs money—so why not spend wisely?

"The best bang for the buck is what we're after," explained Illinois Natural History Survey fisheries biologist Matt Diana, whose DNR-partnered studies seek to improve stocking results and efficiency by tracking specific groups of fish after being stocked. Research conducted around the state at selected lakes such as Pierce Lake near Rockford and Mingo Lake near Champaign aim to answer still-lingering questions: What's the most cost-efficient size for stocking bass? Are "wild" strains any better than captive-reared strains? Which strain of muskie has the greatest potential for longevity and growth—and in which lakes?

Monitoring the results of stocking hasn't always been easy. Once fish are released, measuring their contribution to the fishery can be difficult. But researchers are using modernized versions of old techniques—fin clipping—to identify fish being studied.

"Fin clips are commonly used in stocking research to discern wild fish from those raised in a hatchery," Diana said. During recent studies, unique fin clips were used to identify a specific year-class, different sizes stocked in the same year, or fish stocked from different sources. The stocked fish were monitored to determine which source or size produced the "best" fish for that body of water. Marking fish for other reasons can help in other ways, too, Diana said. One trick involves fin-clipping certain species during electrofishing surveys. The number of fin-clipped fish that are recaptured during subsequent surveys a week or two later can reveal population size.

"If we need to tell individual fish apart," Diana said, "PIT tags can be used. Each tag has a long string of numbers that can be scanned using a reader exactly like what is used in 'microchipping' a pet."

At Kinkaid Lake in Jackson County, DNR fisheries biologist Shawn Hirst uses such tags to monitor the growth and life span of the lake's stocked muskies.

Fin clipping juvenile smallmouth bass enables researchers to monitor individuals within populations. Anglers reap the rewards of quality smallmouth management (right).

"One theory is that muskies in southern impoundments don't live as long because they 'burn out' early," Hirst said. Testing and comparing North America's several different strains of wild muskies in different Illinois lakes can lead researchers to the best strain for the right lake.

Just as gardeners select the right plants for their climate, fisheries biologists are now testing various strains of popular species to stock the best fish in Illinois' diverse waterways.

"It's entirely possible we might someday stock one strain of muskie in northern Illinois," Diana said, "and a different strain in southern Illinois."

During the ongoing U.S. Fish and Wildlife Dingle-Johnson Sportfish Restoration bass study titled "Factors Influencing Largemouth Bass Recruitment and Survival," it was found that survival rates were roughly the same among bass stocked as 4-inch fish and 8-inch fish.

"Larger fish are more expensive to rear," Diana said. "We are therefore recommending stocking the cheaper 4-inch fish bass, due to similar survival and lower cost."

For anglers, the value of such research is revealed in better fishing opportunities in Illinois. And quality fishing experiences are a bargain at any price.