

# Invasive carp continue to be an ongoing threat to South Dakota's waters

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Alison Coulter with an invasive silver carp. Credit: South Dakota State University

Invasive carp (formerly known as Asian carp) pose a significant threat to South Dakota's lakes and rivers, natural resources that are treasured by

thousands of anglers, boaters and water sports enthusiasts each year.

That's why researchers from South Dakota State University are working in conjunction with South Dakota Game, Fish and Parks officials to ensure these natural resources remain largely free from one of "America's most unwanted [fish](#)."

Alison Coulter, assistant professor in SDSU's Department of Natural Resource Management, knows firsthand the challenges invasive carp present. As a postdoctoral fellow, she conducted research on invasive carp in the Illinois River, a waterway that has been all but overrun by this [invasive species](#).

Now in South Dakota, Coulter and her collaborators are working to better understand how to prevent a similar invasion.

## **Misconceptions**

In the United States, there are two distinct types of carp: common and Asian. Anglers in South Dakota are probably more familiar with common carp, which are found in nearly every South Dakota waterway. The species was brought to the U.S. from Europe in 1831 and was distributed throughout the country as "food fish" by the government. While still technically an invasive species, they are considered "naturalized" to the state's waterways.

Asian carp, a catch-all term for four species of carp, are a much different story. These fish are native to Eastern Asia and were brought to the U.S. during the 1970s to help clean commercial stock ponds, aquaculture ponds and wastewater treatment ponds. Flooding eventually allowed the fish to escape. By the early 2000s, the Mississippi River basin, the Missouri River basin and then the Ohio and Illinois rivers all had established invasive carp populations.

The term invasive carp includes different species, each with unique characteristics that can lead to ecological damage. Bighead and silver carp are the most common and arguably the most abundant. Bighead carp feed on zooplankton, while silver carp feed on phytoplankton. Both species compete directly with native fish, as many rely on phyto- and zooplankton for food. Established bighead and silver carp populations can quickly gobble up the lion's share of the plankton, which subsequently squeezes out native fish populations.

Silver carp may also be referred to as "flying carp," due to their ability to jump as high as 10 feet in the air. During silver carp invasions, hundreds of fish can be seen jumping in the air behind a boat's motor, as noise causes them to jump. This can be dangerous for water skiers and boaters, who have been knocked unconscious by silver carp.

Grass carp are similar to common carp and will feed on aquatic vegetation. Because of their habits, grass carp are a threat to wetlands, as they destroy habitats for native fishes, birds, amphibians, and reptiles.

The fourth species of invasive carp, black carp, primarily consumes native snails, mussels, freshwater shrimp, insects and crayfish. Unfortunately, they will not consume Zebras mussels, another invasive species that South Dakota is dealing with. They also directly compete with native fish, turtles, birds, raccoons, otters and muskrats for food.

Invasive carp, like common carp, are endless eaters and can grow quickly. In fact, they grow so quickly that it only takes a few months before a juvenile fish will outgrow all its natural predators. This, coupled with their ability to breed quickly, causes carp to wreak ecological havoc on waterways once they become established.

"What we see from other places is that first, you see changes in your plankton and zooplankton, which overall can mean less food for your

native species," Coulter said. "You will then have poorer feeding conditions for the native fish and eventually that will affect the [native fish](#) populations."

## **South Dakota's challenges**

Water levels in South Dakota have been increasing in past decades. This, coupled with increased flooding events allow invasive carps to spread into new locations. For example, flooding in 2011 allowed the Missouri River to spill into Lake Yankton, a small man-made lake below Gavins Point Dam.

This flooding allowed several species of invasive carp to enter both Lake Yankton and the James River. Dams had previously contained bighead and silver carp but, after flooding, invasive carp have spread throughout much of the James River and have been seen near the river's headwaters in Jamestown. Silver carp, in particular, dominate the river near Yankton. There are so many, it is common for boaters to have silver carp jump directly into their boats.

"They have found young-of-the-year fish (in the James River), which means they are probably reproducing with the river," Coulter said.

"They're not a problem anywhere else in the state yet, but if people don't know about them and what they can do, they could become a growing problem."

Outside of the James River, a small number of invasive carp were found in Silver Lake after winter kills last year and Forsch Lake this year. Coulter and others suspect flooding was again the culprit for the spread.

Some invasive carp have also been found in the Big Sioux River south of Sioux Falls and the Vermillion River. However, dams have been able to prevent them from swimming farther upriver.

## Preventative measures

When invasive carp become entrenched in a waterway, they become nearly impossible to fully remove. This is why [preventative measures](#) are crucial to halting carp invasions, Coulter said.

The starkest example of these measures is in the Chicago area, where billions are being spent on special barriers designed to prevent invasive carp from entering the Great Lakes. Officials fear that if invasive carp were to ever become entrenched in the Great Lakes, they would disrupt a more than \$7 billion commercial fishing industry and a tourism industry valued at more than \$10 billion.

Invasive carp can spread into new locations in several ways, including swimming through floodwaters or open waterways, or from humans physically moving, through the live bait trade for example. Coulter and her collaborators have ongoing projects that address both challenges.

Similar to the Great Lakes, South Dakota officials are concerned that if invasive carp were to enter the Missouri River—above Gavins Point—there could be significant decreases in the native walleye populations, as previous research suggests could happen. To prevent this, Coulter, former SDSU postdoctoral student Peter Pfaff, and SDSU assistant professor David Coulter are modeling flood scenarios along the James River to understand where it might be possible for the carp to enter the Missouri River above Gavins Point.

Coulter and SDSU graduate research assistant Hannah Mulligan are also working to understand the live bait trade in South Dakota. Releasing live bait is one of the most common ways in which invasive fish spread. The team's research has revealed the difficulty South Dakota anglers may have in differentiating between invasive juvenile fish and native juvenile fish. Not being able to tell the difference or improper live bait disposal



could lead to accidental introductions if anglers aren't careful.

"Anglers should have a good understanding of what the regulations are," Coulter said. "For example, in South Dakota you are not supposed to catch live bait for yourself at one waterbody and move it somewhere else. Nor are you allowed to release live bait."

As a preventative measure, Coulter suggests anglers refresh their knowledge of state fishing laws, best disposal practices surrounding live bait, and fish identification. Anglers in the Sioux Falls area should take extra special consideration harvesting live bait, as harvest is banned in many locations due to the presence of carp in the Big Sioux and Vermillion rivers.

## **A surprising taste**

One surprising difference between common and invasive carp is their taste. Common carp, because they feed on aquatic vegetation, are considered to have a very poor taste. Invasive carp, on the other hand, have a surprisingly mild taste and are similar to tilapia. Encouraging anglers to harvest invasive carp as a food source is one of the ways some areas, like Illinois, are fighting back against carp invasions.

"That's why you see pushes for people to eat them, because they taste pretty good," Coulter said. "You are also seeing people developing other products like fertilizers. There's also dog food and then, of course, cut bait."

While most of South Dakota's waterways remain free of invasive carp, the threat remains. The best way to prevent an invasion is by following state regulations and best practices. Coulter also encourages anglers to go out and fish—or bow fish—to help reduce populations. Catching and removing them, while not the most efficient, can still be an effective

method in helping to manage the population.

If an invasive carp is caught, Coulter suggests harvesting the fish to eat or properly disposing of it in a trash bin. Anglers should also report the location where they caught the fish to an SDGFP official if it's not already a location known to have invasive carp. More information is available at <https://sdleastwanted.sd.gov/>

Provided by South Dakota State University

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