European carp have been troubling our waters for decades. Now, a species of carp capable of rocketing itself 10 feet above the water threatens everything.

Rising Concern

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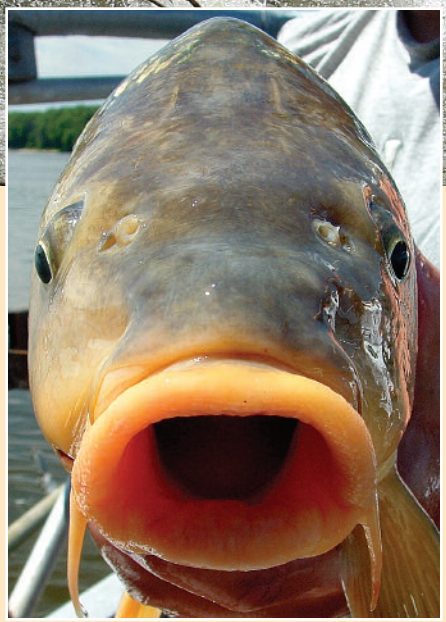
Throughout the last century, human land-use changes, both agricultural and urban, have threatened the Illinois River and its watershed.

Siltation, channelization of streams and ditches, and creation of levees has increased sedimentation rates within backwaters and threatens these habitats for fish and other organisms. While government programs such as the Conservation Reserve Enhancement Program (CREP) have improved some ecological conditions on the Illinois River, the battle to rehabilitate this ecosystem faces continual challenges and is far from won.



An emerging Illinois River threat, and one without an obvious solution, is the dual problem of the bighead (*Hypophthalmichthys nobilis*) and silver carp (*H. molitrix*), often referred to as Asian carp, that have invaded the river.

While non-native common carp (*Cyprinus carpio*) were intentionally stocked throughout the U.S. in the late 19th century as potential table fare to

Illinois is taking a head-on approach in addressing the problem of Asian carp.

mimic the European culture, Asian carp were brought to the U.S. in the 1970s for aquaculture. Bighead and silver carp represent one-half of China's four famous carps (grass [*Ctenopharyngodon idella*] and black carp [*Mylopharyngodon piceus*] also have been introduced to the U.S.). Throughout the world, Asian carp are the most cultured fish—used in hatcheries, stocked into waters as a high-protein human food source and to improve water quality.

Asian carp are efficient filter feeders, eating the smallest plants (phytoplankton) and animals (zooplankton) suspended in the water column, and often are

(Photo by Chris Young, State Journal Register.)

Able to jump to heights of 10 feet, silver carp create a safety issue for boaters.

raised with catfish to improve the quality of the water. This co-habitation reduces the threat of disease to catfish in these ponds, improves overall flavor of the catfish and potentially provides a secondary product for harvest. This strategy was established as an alternative to costly chemical treatments that could have had some deleterious effects on catfish as well as human health concerns.

Asian carp may have escaped from these commercial ponds when the lower Mississippi River watershed flooded, thus establishing feral (wild) populations. Making their way upstream, Asian carp were first collected in Illinois waters in 1985 with populations subsequently exploding in the lower half of the Illinois River. Although population estimates are difficult to calculate for Asian carp because they jump away from boats and elude capture, they are most likely the most abundant fish in the lower Illinois River by weight.

Concern regarding the Asian carp in Illinois is economic and ecological. Economically, Asian carp have the potential to impact river users. For example, commercial fisherman must either target Asian carp at low market prices, or target buffalo and catfish which become increasingly more difficult because of Asian carp. The Asian carp, due to their size and strength, tend to damage fishing gear and decrease overall catches of these other desirable species. Such constraints have influenced many to stop fishing.

The great jumping ability of silver carp (up to heights of 10 feet) also can raise economic as well as safety concerns for river users. Silver carp have been known to hit boaters and jump into boats navigating on the river. In addition to potential medical treatments for fish/people collisions, the presence of Asian carp may discourage others from recreating on the Illinois River, thus losing an important economy for river cities.

Ecologically, the Illinois River is very diverse with more than 100 fish species identified in the past century. Asian carp feed on resources required by all native fishes during early stages of life. While some fish may switch to other food sources, Asian carp may reduce or change the plankton community and negatively impact native fishes. For example, preliminary research at the Illinois River Biological Station, Havana, has documented reduced condition (skinnier at given length) of bigmouth buffalo and gizzard shad. Reduced condition may contribute to poorer health, reduced reproduction and changes in the fish community.

While common carp dominated the Illinois River in the first half of the 20th century, improved river conditions have resulted in decreases in carp abundance and rebound of native species. Unfortunately, Asian carp have thrived in most areas where they have been introduced and changes in plankton, as well as fish fauna, have been noted.

First collected in Illinois in 1985, Asian carp have become abundant and a problem for both recreational and commercial fishermen.

Prevention of Asian carp spread should most certainly be of utmost concern. Invasion of the Great Lakes by Asian carp could result in many negative impacts to the $7.8 billion recreational fishery. Illinois, other Great Lakes states, the Army Corps of Engineers, other federal agencies and Canadian governing bodies have recognized the importance of keeping the Asian carp from the Great Lakes and have developed an electric barrier within the Chicago Sanitary and Ship Canal to prevent spread of Asian carp from the Mississippi River Basin (Illinois-Des Plaines River) to Lake Michigan. The electric barrier represents a proactive measure to thwart Asian carp spread.

While the short-term costs of barrier construction may be high, such proactive efforts may outweigh the long-term costs of reactive management if—or when—Asian carp would reach the Great Lakes.

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