That's Some Fish Story

What the Asian Carp Controversy Can Tell Us about Science, Sustainability, and the Future of the Great Lakes Watershed

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Photo: *Milwaukee Journal Sentinel*

A Short Story about Asian Carp

- Species
  - Silver Carp
  - Bighead Carp
- History in US
- Biology
- Environmental Impacts

Photo: Great Lakes Fisheries Commission

Photo: Great Lakes Fisheries Commission

Bow-hunter on Illinois River being hit by silver carp

Photo: *Daily Mail*

Current Distribution of Asian Carp in US

Map: NPR

A river reversed, a problem created

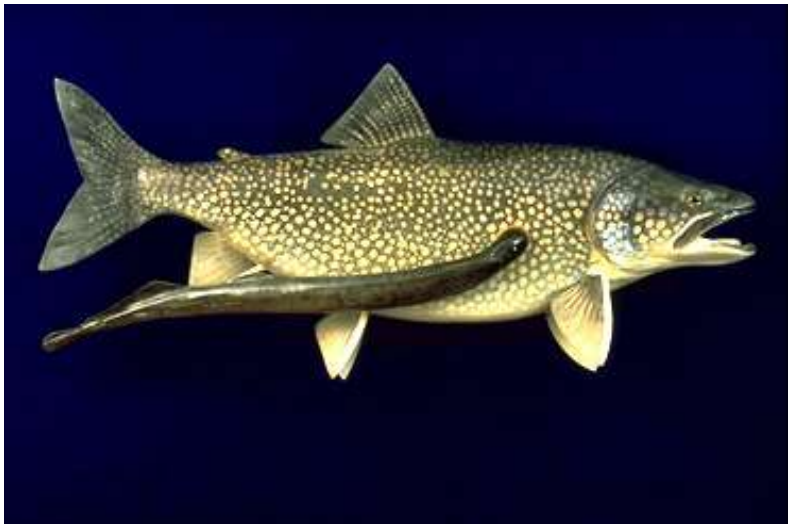
The Chicago and Calumet rivers were once tiny waterways that trickled into Lake Michigan. Begining in 1900 the city dug a series of canals that reversed their flows so they could carry the city's waste into the Mississippi River basin, and away from the lake – the city's drinking water source. A push is now under way to engineer a system to re-establish the natural hydrological divide between Lake Michigan and the Mississippi.

MAN-MADE WATERWAYS | SITES TESTING POSITIVE FOR ASIAN CARP DNA OR FISH | WATER TREATMENT PLANTS | LOCKS

Sources: Great Lakes Fishery Commission

Journal Sentinel

Other Great Lakes Invasive Species



Sea Lamprey
Petromyzon marinus

Origin: Atlantic ocean
Introduced: 1835 (Lake Ontario)
Impacts: Parasite on fish; devastation of whitefish, lake trout, chub in '40s and '50s; in all the Great Lakes, esp. Huron
Costs: $13 million / year for control

Zebra Mussel
Dreissena polymorpha

Origin: Caspian Sea
Introduced: 1988
Impacts: Displacement of native clams and mussels; clogging of water intake pipes; has spread to all GLs, Mississippi River, and inland lakes
Costs: Several hundred million $ / year

How the Debate Is Usually Framed

State vs. State

Environment vs. Industry

Industry vs. Industry

Sustainability

- Environment
- Economy
- Equity

Other Asian Carp Narratives

RE: Science and Sustainability

Fear and loathing

Environmental Apocalypse

National emergency

Denial

Self-interest

Conflict

Cooperation

Technology

Scientific uncertainty

Opportunity

Photo: Absolute Michigan

Other Asian Carp Narratives

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Photo: Absolute Michigan

Uncertainty

Validity of eDNA detection techniques

Other factors:

- Experimental nature of electric barrier
- Potential efficacy of lock closure
- Timing of carp entry into Lake Michigan
- Impact upon Great Lakes ecosystem

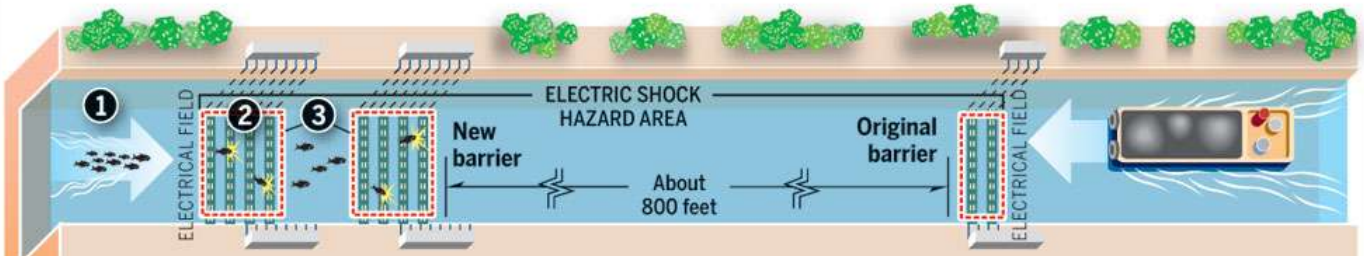
Electric fish barrier tested for safety

Although a $9 million electric barrier to protect the Great Lakes from giant Asian carp was constructed in early 2006, the Coast Guard and Army Corps of Engineers are still conducting safety tests for barge operators and haven't put it into permanent operation. The carp, which could transform the Great Lakes' fishery and make the lakes far less appealing to boaters, are only a two-day swim from Lake Michigan.

Potential pathways for Asian carp to reach Lake Michigan

How electric barriers could turn back Asian carp

1. Migrating Asian carp are repelled by an electrical current shot through an array of steel bands lining the canal bottom.
2. The intensity of the electrical field increases as the fish swim toward the center of each array.
3. Two arrays are needed to provide redundancy and to allow for maintenance. The original barrier is also being rebuilt.



Historically, the Chicago River flowed into Lake Michigan. Chicagoans reversed the flow of the river over a century ago to flush their sewage into the Mississippi River basin. The project meant creating an artificial connection between the Mississippi and the Great Lakes, and that has opened the door to biological chaos.

NOTE: Diagram not to scale

BOB VEIERSTAHLER/rveierstahler@journalsentinel.com

Opportunity

- Rare chance to prevent invasive species takeover before it happens
- Asian Carp as profitable commodity for export or local consumption
- Reconsideration of Chicago's hydrology:
  - Wastewater treatment upgrades
  - Long-term water supply sustainability

The future: Are barriers the answer to undo damage?

A potential scenario would re-establish the hydrological divide between Lake Michigan and the Mississippi River basin that the Chicago canals destroyed more than 100 years ago.

The red blocks represent general areas where the canals might be plugged. Water to the west of the blocks would flow toward the Mississippi; water to the east would flow to Lake Michigan. This would have big implications for commercial navigation, as well as sewage and floodwater management – issues that will be addressed in a forthcoming federal study.

POTENTIAL BARRIERS

Sources: Great Lakes Fishery Commission; Journal Sentinel research

Journal Sentinel

Toward a Sustainable Future?

Proposed ecological separation of
Great Lakes and Mississippi River watersheds

- Blockage of carp from Lake Michigan
- Return of water to Great Lakes basin
- Improved water quality of Chicago's wastewater treatment
- Investment in transportation infrastructure

Coda: Some Fish Stories We Tell

Visceral

- Epic battles and encounters
- Fear of attack
- Revulsion

Environmental

- Fisheries depletion
- Animal cruelty
- Invasive species
- Sustainability

Cultural

- Nostalgia for non-industrial fishing
- Fishing as craft and art

Personal

- The big one that got away
- Intergenerational connections
- Zen fishing