An Open Front Door to Invaders in Great Lakes

Photo by Tom Lynn - A tugboat pushes an oceangoing ship out of Milwaukee's harbor on Thursday. Such ships are known to carry invasive species.

Destructive species hitching ride on cargo ships make Seaway a bigger threat

By **Dan Egan** of the Journal Sentinel

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For thousands of years, the Great Lakes were protected by Niagara Falls on the east and a subcontinental divide on the west, but those barriers to our grandest freshwater system were obliterated over the past century so that oceanic freighters could float in and Chicago sewage could float out.

Unwanted species have been invading with tick-tock regularity ever since.

It is a problem that lacks the graphic horror of the Gulf oil spill, but is more environmentally catastrophic in that it unleashes a pollution that does not decay or disperse - it breeds.

Native fish populations have crashed, freshwater beaches have suffocated under mounds of rotting algae, bird-killing botulism outbreaks have soared and the lakes' invasive species problems have spread down Chicago's canals, into the vast Mississippi basin and across the continent.

Politicians have paid little attention.

Until now. While the lakes have become a biological stew thick with an estimated 185 foreign species, elected officials from both parties in all eight Great Lakes states are demanding that federal agencies muster the will to stop number 186.

They have turned to the courts and to Congress to compel the U.S. Army Corps of Engineers to keep Asian carp from colonizing Lake Michigan by slamming shut the back door to the Great Lakes blasted open by Chicago canal builders more than a century ago.

But what about the front door?

It is still basically business-as-usual on the St. Lawrence Seaway.

Biologists say the artificial shipping link between the Great Lakes and Atlantic Ocean has already wrought more damage than the carp might ever do. And they worry about what might be coming in next, even as the drama to shut the back door plays out in a Chicago federal courtroom and as the Obama administration touts its new Asian carp czar.

Chicago Mayor Richard Daley is no big fan of the czar system, but he says if President Barack Obama felt compelled to appoint one, it should have been to deal with the Seaway.

Daley built a career keeping his eye on the big picture, and when he looks at Great Lakes overseas shipping he sees an ever-shrinking industry taking an ever-growing toll on the region's premier natural resource.

"How can we allow invasive species to come through the St. Lawrence Seaway and no one says anything?" he says.

He wants the Seaway shut to overseas vessels.

He wants this pollution spill plugged.

Now.

"You don't need studies to figure this out."

Little killers

The carp knocking at the back door have grabbed the public's attention because they can grow to a wolf-sized 100 pounds.

They swim in schools so thick the water roils.

They starve out native species by consuming up to 20% of their weight in plankton per day.

They pop out of the water like porpoises and have knocked boaters into emergency rooms.

But the threat they pose to the lakes doesn't compare to the destruction already wrought by just one tiny Seaway invader - the quagga mussel - says Gary Fahnenstiel, an ecologist with the National Oceanic and Atmospheric Administration.

Fahnenstiel can understand why the carp have become the poster-species for Great Lakes invasions.

People tend to fear nature's big stuff. They worry about being torn apart by a shark or shredded by a grizzly. But what they should fear are nature's little critters, such as bacteria.

They do the real killing.

It can be the same with lake invaders.

Fahnenstiel points to the fingernail-sized quagga.

In just the past five years, the mollusks have literally sucked much of the life out of Lake Michigan, turning it into a ghost of its former self in terms of fish-sustaining plankton.

Sandy-bottomed beaches might rim the shoreline, but if the lake were drained, Fahnenstiel says, it would now almost be possible to walk the 80 miles between Milwaukee and Muskegon, Mich., on a bed of quagga mussels.

"It's like a carpet, and they average about 5,000 per square meter - all the way across," he says.

Next door on Lake Huron, chinook salmon, a species prized by sportsmen, is now all but gone. The chinook themselves are foreigners initially introduced to gobble up invasive alewives. Fishery managers blame the salmon crash on quaggas and the oceangoing vessels that brought them in.

University of Michigan biologist David Jude says the quagga mussel damage goes beyond turning areas of Lakes Michigan and Huron into what some have termed a "plankton desert."

He notes the quaggas are also implicated in bird-killing botulism outbreaks, chronic blooms of blue-green algae - toxic to humans - and "dead zone" areas of Lake Erie where the water is so oxygen-depleted it cannot sustain any fish.

The mussels also provide sustenance for another Seaway invader, the round goby, which also feasts on the eggs of native species such as smallmouth bass and is now so great in number that the U.S. Geological Survey describes areas of the lakes where they flourish as "infested."

"What further examples do we need of how devastating one exotic species can be?" Jude says. "We need to address the issue of control of all ships bringing in ballast water from foreign ports into the Great Lakes, and stop this deadly game of ecological roulette."

Sacred cow sinking?

Shutting the Great Lakes' back door could mean big changes for the barges that ply the Chicago canals and locks that connect Lake Michigan to the Mississippi. Politicians outside Illinois do not care.

Conservationists call it a remarkable moment.

"Navigation is no longer a sacred cow," says Jennifer Nalbone of the conservation group Great Lakes United. "And that's a fascinating thing to see."

Nobody is talking about putting the barges out of business. But there is serious talk about erecting a physical barrier on the canal system somewhere near downtown Chicago so bulk goods such as coal, salt, chemicals and cement no longer float freely between Lake Michigan and the Mississippi.

This project to separate the two basins would still allow for barges to motor all the way from the Gulf of Mexico into the heart of metropolitan Chicago.

If the barriers are paired with intermodal hubs to efficiently transfer payloads onto regional trains and trucks, it could actually prove to be a boon for the barge industry.

But rebuilding that natural divide will take a monumental engineering feat because it will require re-plumbing Chicago so its namesake river once again flows into Lake Michigan instead of into the Mississippi basin and down to the Gulf of Mexico.

The concept has Daley's support, but it is expected to take years to plan and construct. That is not fast enough for the politicians suing to stop the advancing Asian carp.

As an emergency measure they want a federal judge to shut two navigation locks - one on the Chicago River and one on the Little Calumet River.

It is an audacious request, and one that has lot of Chicagoans wondering if it's worth the sacrifice, especially if it solves only half the problem.

"If somebody wants to protect the lake, I think you've got to close all the doors," says Richard Lanyon, the man in charge of the Chicago canal system. "Is anybody going to shut down the St. Lawrence Seaway? I doubt it."

The implication is that the overseas traffic on the Seaway is just too important.

The reality is that the amount of cargo carried by overseas ships through the Seaway is not much more than what moves through just one of the Chicago locks targeted for closure.

And the volume of cargo carried by the Seaway's overseas vessels - mostly inbound steel and outbound grain - has been in decline for years, tumbling last year to just over 5 million tons.

How little cargo is that?

Less than what could be carried annually by a single daily inbound and outbound train.

"It's obscene that we made this trade-off," says Jim Johnson, a biologist with the Michigan Department of Natural Resources.

Daley wants that train put on the tracks.

"Offload the cargo in Nova Scotia and ship it down through rail," the mayor says. "That will protect the Great Lakes forever. That will protect local and state governments from spending hundreds of millions of dollars."

Door still open

Ballast discharges are blamed for the majority of invasions since the Seaway opened, including zebra mussels, quagga mussels, round gobies, spiny water fleas and, most recently, the bloody red shrimp. Ships take in ballast to steady less-than-full vessels on the high seas, and then that water - and whatever life is lurking in it - can get discharged as cargo is loaded at port.

By 2006, a new species was being discovered in the lakes, on average, every 28 weeks, according to Great Lakes invasive species expert and McGill University professor Anthony Ricciardi.

Since then, the U.S. and Canada have begun requiring all overseas ships bound for the Great Lakes to flush their ballast tanks with mid-ocean saltwater in an attempt to kill or expel unwanted species.

Seaway operators say the rule to flush tanks with saltwater has reduced the risk of new ballast invasions "to extremely low levels."

But Ricciardi says it would be "premature and foolhardy" to think the ballast problem has been solved. While he calls the new saltwater flush rules "very promising," he says it will take several years before their effectiveness can be assessed.

"I don't think you should characterize the front door as being wide open," he says. "We just don't know to what extent it has been left ajar."

Even if a saltwater flush kills or expels over 90% of a ship's ballast tank dwellers, it doesn't eliminate them all - and it only takes a couple of survivors to ignite an invasion.

"You cannot treat invasive species like you do other water pollution, where you lower it to an acceptable level and it will dilute away," says Michigan biologist Johnson.

For evidence the new rules are working, Seaway advocates point to the fact that the last invasive species discovered in the Great Lakes was in 2006. The last time there was such a long gap between species discoveries was between 1968 and 1972.

"This observation is not definitive, but it is indicative - the trend is in the right direction," says David Reid, a retired ballast expert for the National Oceanic and Atmospheric Administration who is now a paid scientific adviser to the St. Lawrence Seaway Development Corp.

But University of Chicago's Reuben Keller, an expert on the economic and ecological impact of invasive species, points out that it can be years - even decades - between a species' arrival and the point where its population becomes large enough to be detected.

Says University of Notre Dame biologist David Lodge: "If you don't look, you don't find. The problem is we don't have a standardized surveillance program, so we don't have lot of confidence in the observation - or lack thereof - of new species. You can't really make any claims yet about whether ballast water exchange is effective."

Obama's zero tolerance

There are pushes on many fronts to close the door completely.

Conservationists successfully sued the Environmental Protection Agency in 2006 to start treating ballast discharges like any other noxious pollutant, but the agency has since essentially declined to order any measures beyond saltwater flushing.

It is a policy that EPA administrator Lisa Jackson acknowledged "doesn't begin to address some of the concerns that are out there."

She was appointed by Obama, who as a candidate promised "zero tolerance" for new Great Lakes invasions, but because of her agency's lack of action on the ballast problem environmentalists have taken the EPA back to court.

The U.S. Coast Guard is plodding toward enacting its own ballast regulations, which could be released sometime this year or next - but most are expecting any new rules to allow for a multiyear phase-in period for ships to install ballast treatment systems.

Meanwhile, the Great Lakes states of New York, Michigan and Wisconsin have passed their own state-specific ballast rules, though the treatment systems New York and Wisconsin intend to require will be phased in over years because the technology to meet their standards is still being developed.

Most of those involved in the issue, the shipping industry included, believe the best solution to the problem would be a uniform nationwide ballast rule, but Congress has failed for years to pass such a measure - and even if one were passed tomorrow, polluted ballast discharges would likely continue for years.

The reason: Total sterilization is considered a technological impossibility at this point, so there remains disagreement over what the national ballast standard should be, in terms of the amount of

living organisms that could be discharged. There are also questions about how to test ships for compliance.

"There is no fast solution," says Seaway consultant Reid. "But there are numerous systems that should, eventually, solve the problem."

Fahnenstiel, the ecologist with the oceanic administration, fears such "eventual" solutions require time the lakes don't have, even as the White House pushes ahead with its multibillion dollar "Great Lakes Restoration Initiative."

The restoration plan is funding projects to clean up toxic messes, restore wetlands and research how to combat foreign species already in the lakes.

But the initiative doesn't call for new laws to keep organisms out of the lakes in the first place, a situation that makes zero sense to Fahnenstiel.

"It's like spraying your house for mosquitoes and leaving the front door wide open."

Seaway taboo

Some in the conservation community are steering clear of the contentious courtroom fight to order an emergency closure of the Chicago locks. They worry the leaky structures might not be an effective fish barrier. They also fear the damage a closure could do to the lock-dependent barge operators and the industries they serve because that could kill an emerging political consensus to build a permanent barrier system.

That hasn't stopped five attorneys general from Great Lakes states from steaming ahead; it's a politically popular plan almost everywhere outside the state of Illinois.

Dealing with the Seaway in the same tough way is another story.

Conservation groups have for years advocated closing the Seaway locks to oceangoing vessels until the ballast problem is solved.

But federal lawmakers have shown zero interest.

Mike Hansen, a University of Wisconsin-Stevens Point professor and former chairman of the Great Lakes Fishery Commission, traveled to Washington, D.C., this year to talk to lawmakers about the carp - and to pitch the message that the fight against invasive species is about more than just these fish, and more than the Chicago canals.

He left a meeting with congressional staffers doubtful the alarm bells now ringing to stop the carp will wake Washington up to the need to slam shut all pathways into the lakes.

"They basically said, 'We can't get any traction on that, so we're going to work this from the perspective of the Asian carp in the Chicago canal,' and that was it," Hansen says. "To their credit, they're much more astute about what can be pulled off in Washington than I am. It's disheartening to me, but I'm sure they're probably correct."

One reason the idea of shutting the Seaway to overseas vessels remains a political taboo is that the Seaway is jointly owned with Canada - though the U.S. owns outright two of the Seaway locks that all oceangoing ships must pass through.

The sovereignty issue hasn't stopped Canadians from pushing to close the locks at Chicago; early this year the Province of Ontario filed a motion with the U.S. Supreme Court that stated:

"Our waters are interconnected, and irreparable harm to U.S. states will almost certainly entail similar irreparable harm to Ontario."

The Great Lakes states could make the same argument against any trouble that might be sailing up the Seaway at this very moment.

Trying to close all the doors

The U.S. Army Corps of Engineers is not only exploring what it will take to shut the back door to the Great Lakes, it's also looking at eliminating a number of potential side doors.

There are several possible - or much smaller - connections between the Mississippi River basin and Great Lakes basin in Wisconsin, Minnesota, Indiana and Ohio. These are not wide-open doors like the Chicago canal system; most typically require flooding to create a hydrologic link, and in some cases that connection may be sheets of water too shallow for fish to swim across. Other connections involve outdated canals no longer critical for commerce.

"Bottom line - the hundred foot wide canal is by far the easiest way for carp to get into the lakes and should be on the forefront of everyone's mind," says Joel Brammeier, president of the Alliance for the Great Lakes who co-authored a 2008 study looking at what it will take to once again separate Lake Michigan from the Mississippi basin.

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About this series

For the past six years, Journal Sentinel reporter Dan Egan has been reporting on threats facing the Great Lakes. This year, his focus is on how the world's largest freshwater system could be restored and protected.

• Close the back door **(July 4 and 5, 2010): With voracious Asian carp knocking, a push is afoot to plug the Chicago canal system - a move that could actually benefit Chicago.**

• Shut the front door, too **(Today): Amid the back door push, a critical question remains: What about the front door? It's still basically business as usual on the St. Lawrence Seaway.**