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Lake Ontario has a big say in changes to environment

KATE PERRY | STAFF WRITER

If the terrifying predictions about global warming don't motivate you to carpool or give up that gas-guzzler, maybe the threat of more snow will.

That's right Rochesterians: If global climate change continues on its current path, it could mean more lake effect snow, and all the bone-chilling, boot-soaking fun that goes with it.


Stepp

Matt Stepp, a 24-year-old Rochester Institute of Technology student pursuing a master's degree in science technology and public policy, says that in the next 25 years, the lake could warm up one to two degrees and that little uptick could, ironically, keep us shoveling longer.

"It will essentially shorten the season that the lake freezes over, so it will stay unfrozen longer," says Stepp, who has a bachelor's degree in meteorology. "It will elongate the season of lake effect snow."

As far as Rochester's environment goes, Lake Ontario is one big, fat, wet player due north. We drink it, we play in it, and it can make or break our weather.

As far as the lake's future goes, there's a lot riding on the behavior of the human race. In 25 years, will folks with beautiful lakefront property in Sodus be staring down a crumbling shoreline? Will it be full of fish from another part of the world? Will people in the state of Wyoming be drinking it?

It all depends on the choices we make, several local scientists say. Here's a look at three environmental issues and how they could affect Lake Ontario in 2033.

Climate change

The steady rise of the Earth's temperature could influence bodies of fresh water such as Lake Ontario if left unchecked. Hotter temperatures could change the ecosystem and increase the spread of disease, but when you ask scientists about climate change and Lake Ontario, they talk about the lake's level.


Garzione

Carmala Garzione, a 36-year-old associate professor of earth and environmental science at the University of Rochester, says that if you look at global climate change models, they suggest temperatures will rise, and rainfall will increase and lake levels will go with it — anywhere up to three feet. If you look at more local models, Garzione says, warmer temperatures will increase evaporation enough to lower the lake level in spite of the extra rain.

Garzione isn't willing to venture a guess on which will happen, but either would change Lake Ontario and its environs.

If the lake rises, the shoreline will change and areas with very erodible soil could be in trouble. For instance, Garzione says, in Sodus Bay the shore is mostly glacial till, a coarse-grain, loose sediment that erodes easily.

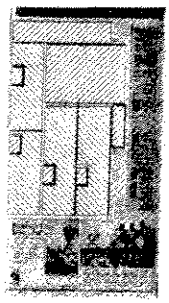
Higher lake levels could also mean the flooding of nearby wetlands, forcing out some species, Garzione says.

If the lake level drops — the outcome Stepp is betting on — shipping routes might need adjustment and wetlands could dry up, again forcing some species to move out.

Garzione notes that lake levels are controlled by dams along the St. Lawrence River, but persistent changes in the lake's level will take more than the flip of a lever to control.

"Somewhere along the system, people will feel the effects of changes in hydrology that result from climate change," she says.

"It is a sensitive issue because this region borders the U.S. and Canada, so two countries have to be involved in the decision-



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making. Controlling lake level on Lake Ontario would inevitably have an effect on ecosystems and inhabitants on the St. Lawrence Seaway."

Depletion of fresh water

It's hard to imagine running out of drinking water when you live next to a lake so big you can't see to the other side.

But running out is a reality for millions in America, especially in the West, where the Colorado River is so tapped out by the thirsty it doesn't even run all the way to the Gulf of Mexico some days, says Jennifer Hill, a 37-year-old professor of biology at Monroe Community College.

America is running out of drinking water, and in 25 years the Great Lakes could look like a refreshing solution to a parched nation.

"The Great Lakes contain about 20 percent of all the fresh water on the planet, so locally we are not worried about it, but it's the idea that when fresh water is depleted around the U.S., when does (Lake Ontario) become a resource of interest?" Hill asked. "It seems ridiculous at this point to ship water from Lake Ontario all the way over there, but who knows at that point."

A national group and congressional representatives might stop the idea of a water pipeline from the Great Lakes to the Great Plains before it's realized.


Hill

The waters will be at least partly protected from pilfering if the Great Lakes compact is signed by President George W. Bush, says David Naftzger, executive director of the Council of Great Lakes Governors, based in Chicago.

The compact, which already has the support of all the governors in the Great Lakes states and approval from both houses of Congress, would protect the Great Lakes in a number of ways. This includes prohibition of siphoning from municipalities outside the Great Lakes basin except for "limited, strictly regulated exceptions," Naftzger says.

"Long-distance diversions would be prohibited once and for all," he says.

Bush has expressed support for the compact but as of press time had yet to sign it.

The compact is co-sponsored by both U.S. senators from New York and 10 state representatives, including Rep. James Walsh, R-Onondaga, Rep. Tom Reynolds, R-Clarence, and Rep. Louise Slaughter, D-Fairport.

Invasive species

It's hard to imagine that an organism a millimeter long could change the entire food web of such a massive body of water as Lake Ontario, but it's possible.

Meet the cercopagis: a tiny arthropod with a long, hooked tail.

The little transplant from the Caspian Sea is making its presence felt in the lake. It's been known to clog fishing nets and compete voraciously with other microorganisms for food.

Christi Severson, a 23-year-old graduate student in environmental science at the State University College at Brockport, says the cercopagis could affect larger wildlife, too.

She says fish are gobbling them up and the long tail is taking up space meant for something with more nutrients. The U.S. Environmental Protection Agency reports that the long-term effects of cercopagis are unknown, but the agency notes that the cercopagis could compete with young fish for small prey.

Severson says the cercopagis is just one example of invasive species competing with native organisms in Lake Ontario.

Larger species such as alewives, a bait fish that's made the lake home, are also moving in. In the case of that species, Severson says, humans have also knowingly changed the wildlife population in the lake by stocking more salmon to eat the alewives.


Severson

Other species, such as the notorious zebra mussel, actually change the quality of the lake water because of their filtering powers. The upshot, Severson says, was clearer water, but the death of some organisms at the bottom of the lake. Clearer water increased the amount of sunlight reaching deeper levels of the lake, allowing greater algae growth. When the algae died, it smothered some organisms.

With so many changes in the food chain, Severson says it's impossible to make any concrete predictions except that Lake Ontario's inhabitants will be different in 25 years.

"We can say that it could be significantly different when we look at wildlife in the lake and we could see a difference in the water quality, too," she says. ❑

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