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**Urban, suburban pollution threaten lake**

By Candace Page

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All land is not created equal when it comes to pollution of Lake Champlain.

About 5 percent of the Champlain basin has been developed into lawns, driveways, roads, and such, but that 5 percent produces more than 50 percent of the lake's phosphorus pollution, according to a new analysis by University of Vermont researchers.

Their study reverses estimates made in the 1990s, which attributed 51 percent of the pollution to farms, and just 37 percent to urban and suburban areas.

For Julie Moore, new director of the state's lake cleanup programs, the message is clear: "Acre for acre, less phosphorus comes off farmland than developed land, so ensuring sustainable agriculture is a really important part of our strategy."

To Ted Kissane, a retired hotel executive living on Lake Champlain's Maquam Shore in St. Albans, the lesson comes home: Stop using phosphorus fertilizers. Pick up the dog's droppings. Use phosphorus-free dishwasher detergent. "Everything we do as homeowners adds up. None of us has a right to pollute the lake," he said Monday.

In the fast-growing watershed around St. Albans Bay, local groups and state government are collaborating to provide homeowners with runoff-trapping rain barrels and to encourage sale of phosphorus-free fertilizers.

Phosphorus is considered the lake's main pollutant because it feeds algae and water weeds that mar or destroy people's pleasure in swimming or boating. It's been estimated that one pound of phosphorus can feed 300 to 500 pounds of algae.

In a study released this month, a team at UVM's Rubenstein School of Environment and Natural Resources analyzed satellite imagery from 2001 to calculate the share of the basin occupied by farms, forests and development. The last such study was based on 1992 maps.

The researchers then linked their land use analysis to measurements of phosphorus flowing into the lake from rivers in Vermont, New York and Quebec.

They cite three reasons they found urban/suburban areas responsible for a bigger share of the phosphorus problem:

The 1992 mapping underestimated the amount of developed land.

More land has been converted to development since 1992.

The average acre of developed land in the basin exports more phosphorus than previously thought.

And -- perhaps bad news for Lake Champlain -- the new study is based on satellite images taken six years ago, in 2001.

"It clearly underestimates developed land today. Very clearly, farm and forest land are still being cleared for development," said Mary Watzin, UVM's lead lake researcher. Watzin did not take part in the land use study, but examined the results as chairman of a Lake Champlain Basin Program technical committee.

**'Can't ignore stormwater'**

Watzin also cautioned the new study should not prompt major changes in cleanup programs around Missisquoi and St. Albans bays, where algae problems are worst.

Especially around Missisquoi Bay, agriculture remains the dominant land use and the dominant source of phosphorus pollution.

Much of the development is occurring in Chittenden County. Rivers carry phosphorus into the huge body of the broad lake, where water quality remains very good.

"The main lake has more capacity to absorb pollutants. That doesn't mean we don't want to work on stormwater, but working on that in Chittenden County will do nothing to solve the problems in St. Albans and Missisquoi bays," Watzin said.

The state's lead lake scientist, Eric Smeltzer, looked at the study from a slightly different angle.

"This gives us the perspective that even in the northern lake we can't ignore urban stormwater sources," he said.

He said there are many things communities can do, from minimizing creation of new paved areas to zoning changes that would require development to be set back from river shores.

**All those dogs add up**

While "urban pollution" conjures the image of city streets and storm drains, much of the fertilizer pollution from developed land runs off suburban lawns and driveways.

Citizens' groups in St. Albans began focusing on lawns and gardens recently after a local study estimated those areas are responsible for a quarter of the phosphorus reaching St. Albans Bay.

Much of the bay is unswimmable because of weeds and algae blooms.

"The message we're trying to send is, have a healthy lawn -- and a healthy lawn means you don't have to use fertilizers or pesticides," said Karen Bates, the state watershed coordinator for the region.

She and others worked with local retailers to get phosphorus-free fertilizer on the shelves, to offer $5 rebates to homeowners who purchase the fertilizer and to begin distribution of 60 rain barrels.

Kissane, the Maquam Shore homeowner, has gotten the message. He and his wife rebuilt a lakeshore home for their retirement two years ago.

That meant putting in a lawn that covers much of their two-acre property.

"When we put in the lawn, it got no fertilizer. We got a lawn that was not the greatest, so what we ended up doing was planting clover. With the clover and the grass, it is very healthy and beautiful now," he said.

The strategy demonstrated that what the grass needed was not phosphorus but nitrogen, another nutrient. Clover draws nitrogen from the air and fixes it in the soil.

Kissane didn't stop there. "Our dog droppings go in the trash now. In the old days we threw them in the woods," he said. The feces of all animals are a rich source of phosphorus.

"You think one little dog poop isn't contributing much, but when you multiply that by 365, and by all the families that have dogs, that really adds up," Kissane said.

"That's what we've come to realize -- it all adds up," he said.

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