


Buzzards Bay's health declines

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Dartmouth harbormaster Steve Melo patrols Apponagansett Harbor.

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The health of Buzzards Bay is declining due to population growth and development pressure in watershed communities, which have increased pollution and destroyed natural filters that keep the bay clean, according to a new report by a local conservation group.

The 2007 State of the Bay report — to be released today by the Coalition for Buzzards Bay — examined pollution

sources, watershed features and living marine resources to determine the bay's overall health.

The bay is worse off than it was in 2003 when the first State of the Bay report came out, according to the analysis.

"The bay can't take us not dealing with nitrogen pollution from wastewater anymore," said Mark Rasmussen, the coalition's executive director.

Nitrogen from home septic systems and town sewer plants is making the bay's near-shore waters cloudy and murky and killing eelgrass beds, which once supported a thriving bay scallop population.

Poorly-planned development in the 432-square-mile Buzzards Bay watershed is also contributing to the loss of forests, wetlands and stream buffers that filter nitrogen and other pollutants before they reach the bay, Mr. Rasmussen said.

Increases in paved areas such as roads, parking lots and driveways are washing more nitrogen, bacteria and other pollutants into the bay when it rains.

In the 2007 report, Buzzards Bay received an overall score of 45 out of 100 — a three-point drop from its 2003 score of 48.

All but one of the scores for the report's nine individual categories fell, meaning they fared worse than in 2003. Those categories include nitrogen, bacteria, forests, stream buffers, wetlands, eelgrass, bay scallops and herring.

The score for toxic pollution, the only seemingly bright spot of the report, increased by 2 points to 47, but Mr. Rasmussen warned that it "may be bright because of a lack of information" and lack of monitoring of toxic pollutants.

Coalition staff compiled the report with the help of scientists and land-use planners who analyzed the best available current and historical information for the bay's environmental indicators. A variety of state and regional environmental and development agencies and organizations provided data for the report, which was funded by the coalition's members and supporters.

The report measures the current state of the bay against the oldest and healthiest record of the bay and its resources: a 1602 account by English explorer Bartholomew Gosnold and his crew. According to the coalition, Gosnold described a healthy bay ecosystem with clear waters, ancient forests, extensive salt marsh meadows and abundant fish stocks.

The coalition modeled its watershed health report on the Chesapeake Bay Foundation's annual State of the Bay Report, Mr. Rasmussen said.

The Chesapeake, which in 1983 became the first estuary in the country to be targeted for restoration and

protection by the U.S. Environmental Protection Agency and states near the bay, received a score of 29 in the foundation's 2006 report, up two points from 27 in 2005. (That report is based on the narratives of Capt. John Smith's explorations of the bay during the early 1600s.)

For both reports, a score of 30 or below indicates a "collapse" of the bay's ecosystem, Mr. Rasmussen said.

With its score of 45, Buzzards Bay is at a critical point, he said.

"We haven't destroyed our foundation yet," he said. "We have the opportunity here not to ever get to the point of the Chesapeake."

While the pristine bay that Gosnold encountered would receive a score of 100, Mr. Rasmussen said that is an unrealistic goal for today given the amount of human alteration. Instead, the coalition is aiming to up the bay's score to between 75 and 80, he said.

Mr. Rasmussen thinks this is an achievable target.

The technology exists to reduce nitrogen levels, but boosting the bay's score will require a commitment to smart development, he said.

He defines smart development as that which restricts paved surfaces, protects wetlands and other natural resource areas, and deals with nitrogen pollution.

Current development practices are not there yet, he said.

From 2000 to 2005, about 1.7 acres of land was developed each day in the Buzzards Bay watershed, translating to a total of 3,723 acres of land development during the 6-year period, according to the Southeast Regional Planning & Economic Development District.

Stephen Smith, SRPEDD's executive director, speculates that the rate of development for the watershed is "more rapid" than for the state as a whole, probably because of higher housing prices elsewhere, especially in Boston, Mr. Smith said.

In 2006, the median housing price in the Metro-Boston area was more than double that for Fall River and New Bedford, he said.

New development, Mr. Smith says, is predominantly year-round, single family homes on large lots in remote parts of watershed communities such as Rochester.

"What was formerly fields and woods are being turned into lawns and landscaped areas," he said.

Nearly all the new subdivisions are on septic systems.

Septic systems — even those that meet the state's strict Title 5 criteria — do not remove nitrogen, Mr. Rasmussen said.

Instead, nitrogen from human waste seeps into groundwater that ultimately flows into the bay, he said.

The buildup of nitrogen and other nutrients in coastal waters triggers massive blooms of algae that suck up oxygen and block out sunlight, killing other marine species.

The process, known as eutrophication, can lead to low water clarity, slimy sea floors, bad odors, algae-covered shorelines and fish kills.

Signs of eutrophication are present in more than half of Buzzards Bay's 30 major harbors and coves, according to the 2007 report.

"Simply put, the nitrogen pollution problem is expanding and getting away from us and is driving bay decline more than any other factor," according to the report. "It is the greatest long-term threat to the health of the Bay."

Scientists and health experts say anyone who flushes a toilet or fertilizes their lawn is responsible for nitrogen pollution.

To combat the problem, the coalition recommends that watershed communities assess all harbors and coves as part of the Massachusetts Estuaries Project, develop and implement estuary restoration action plans, upgrade sewer plants to enhance nitrogen removal and expand the use of community, nitrogen-reducing wastewater systems.

Some communities such as Falmouth and Wareham have recently upgraded their sewer plants to reduce nitrogen pollution, Mr. Rasmussen said.

Doing the same in Fairhaven and Marion should be the next priority, he said. Mr. Rasmussen estimated that the cost of upgrading a municipal plant with a nitrogen removal component is between \$2.5 million and \$5 million. Towns typically pay for the upgrade with low-interest federal and state loans that they pay back over decades.

"Gone are the days of (federal) government grants" for plant upgrades, he said.

Homeowners can do their part to address the nitrogen pollution problem by using organic fertilizer and other lawn-care products, according to the coalition. Those with septic systems are encouraged to upgrade to new nitrogen-reducing systems that can cut nitrogen pollution by up to 50 percent. Such systems typically cost 25 to 50 percent more than traditional septic systems, Mr. Rasmussen said.

A cheaper, more effective solution is for neighborhoods to use shared community wastewater systems, which can achieve up to 90 percent reductions in nitrogen, he said. A group of 340 homes on West Island in Fairhaven

recently upgraded to one of these shared systems, Mr. Rasmussen said.

"It gets good nitrogen removal and has cleaned up a lot of septic problems on the island," he said.

Shared systems are "happening everywhere" on Cape Cod, Mr. Rasmussen said.

"Here, they have not been pushed and asked for as much."

Mr. Smith agreed that the Cape seems to have a greater level of awareness and action regarding nitrogen loading issues.

"It seems like the whole Cape is a little more sophisticated about these things than we are on this side of the canal in terms of bylaws and citizen activism," he said.

Wendy Henderson, Dartmouth's director of public health, said the town is wary of requiring all homeowners to install individual nitrogen-reducing systems because they are expensive and "don't work very efficiently on a seasonal basis."

The simplest solution to the nitrogen problem is for people to install composting toilets in their homes, she said.

In Dartmouth, homeowners must add a nitrogen-reducing component to their septic system if they exceed the four-bedroom per acre requirement, designed to limit nitrogen loading to protect public and environmental health, Ms. Henderson said.

Dartmouth is concerned about increasing nitrogen pollution in local harbors and coves, she said. Whether the town will pass any new regulations to further limit nitrogen loading will depend on the findings of "good science," she said.

The Massachusetts Estuaries Project, a collaboration between the state Department of Environmental Protection (DEP) and UMass Dartmouth's School for Marine Science and Technology (SMAST) that began in 2002, aims to collect data on water quality and nutrient loading for 89 estuaries in Southeastern, Massachusetts.

DEP spokesman Ed Coletta said the project's researchers are calculating the Total Maximum Daily Load (TMDL) for different water bodies in the area. TMDLs indicate the maximum amount of nitrogen and other pollutants that a water body can withstand and still meet state water quality standards for public health and healthy ecosystems, according to DEP.

As part of the project, DEP is working with towns to identify the sources of nitrogen pollution, Mr. Coletta said.

"Obviously septic and nitrogen loading from septic is an issue that we see as we look at TMDL's on both the Cape and SouthCoast," Mr. Coletta said. "It is a big issue that needs to be addressed."

He said there is not yet a "definite, final answer" on whether new subdivisions are the main culprit for increasing nitrogen pollution in Buzzards Bay.

Brian Howes, program manager of the estuaries project and director of the Coastal Systems Program at SMAST, said he was not surprised with the State of the Bay's findings that the bay's health is declining.

"Bay-wide, as we continue to expand residential development, primarily we will expect to see nutrient pollution increase until towns reach a point where they decide to manage the system," Dr. Howes said.

He listed Falmouth and Wareham among the towns that have "stepped it up" by upgrading their wastewater treatment plants with nitrogen-reducing technology.

As for septic systems, Dr. Howes said some neighborhoods in the watershed "can be left on septic without damaging the bay.

"We don't have to reduce nitrogen inputs to zero, we just have to get them back down to where they were from 1960 to 1970," he said. "Estuarine systems can tolerate a certain amount of nitrogen. We have to figure out that target load and get back to that level."

Reports such as the State of the Bay will help that effort, he said.

"You have to have tracking like this to do any kind of management and protection."

The Coalition for Buzzards Bay's 2007 State of the Bay Report will be available Sunday on the group's website at www.savebuzzardsbay.org

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