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Watershed development jeopardizes bay life

REPORT: Woods, wetlands in Ocean giving way to housing

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TOMS RIVER BUREAU

People have altered a full one-third of the landscape in the Barnegat Bay watershed, pushing the percentage of land cover changes past 33 percent by 2006 with residential development to house Ocean County's swelling population, according to a new Rutgers University report.

The percentage of developed land is up from 25 percent in 1995, and continued losses of woods and wetlands are making the bay's pollution and nutrient overload problems worse, researchers Richard G. Lathrop and Scott M. Haag say in their paper, which was underwritten by the Barnegat Bay National Estuary Program.

"It's a driver for everything that happens in the watershed and downstream," Lathrop said of land cover changes, which he and Haag documented by digitally comparing 2006 aerial photography and earlier mapping from the state Department of Environmental Protection.

Most significantly, Lathrop and Haag found that 1,920 acres have been developed since 1995 in what they called riparian zones — hardwood bottomlands and similar terrains that are hydrological links between streams and ground water. Those lands are not protected by state wetlands law, and in places they extend even beyond the 300-foot buffer area that environmental activists have sought along the Toms and Metedeconk rivers.

"We're defining riparian zones ecologically," where soil types and other characteristics indicate linkage to nearby streams and wetlands, said Lathrop, who is director of the Center for Remote Sensing and Spatial Analysis at Rutgers.

Along northern Ocean County streams, 20 percent or more of those riparian zones are now altered, the report states. Lathrop said that's significant in terms of water quality, for studies have shown that woodland and vegetation along stream corridors will intercept nitrogen compounds — a critical ingredient in the decline of Barnegat bay's ecosystem, according to scientists.

"Research has shown they actually help remove nitrogen from the ground water before it emerges in the wetlands," Lathrop said.

Plant life in dense streamside woods use the nitrogen like fertilizer, so land clearance near the stream corridors continues to leave more nitrogen to make its way downstream to the bay, the report says.

Disappearing forests

Throughout the 660 square-mile-acre watershed — which extends into southern Monmouth County — some 9,241 acres of forested land were cleared from 1995 to 2002, and another 4,753 acres of trees were felled from 2002 to 2006 for a total of 13,994 wooded acres cleared in those years, the report says.

Environmental activists and land-conservation experts are meeting in Toms River on Thursday to discuss strategies for dealing with the nutrient problem. Nitrogen compounds entering the bay act like fertilizer does on land, fueling big blooms of sea lettuce and other algae that have gradually changed the marine ecosystem, scientists say.

"A lot of people don't understand what needs to be done," said Michael Kennish, a research professor at Rutgers who documents changes in the bay. He warns that much worse is to come with population increases projected at 40 percent in the next two decades.

Kennish and his team at the Institute of Marine and Coastal Sciences have several new projects proposed, including an effort to document nitrogen threshold levels to show exactly when nutrient loading levels begin to tip the marine ecosystem.

In 2003, the state Department of Environmental Protection compiled a detailed technical justification for 300-foot-wide buffers as a method for removing pollutants before they can enter streams, said Bill Wolfe, an ex-DEP planner and now director of Public Employees for Environmental Responsibility.

Those 300-foot buffers are a feature of the DEP's category 1 designation for streams that are critical for water supply and wildlife. The new Rutgers paper makes a good case for those buffers throughout the Barnegat watershed, Wolfe said.

Wider buffers urged

Lathrop and Haag also identified places where wider buffer areas along the bay's freshwater tributaries could protect water quality, and open ground that could be replanted with new trees to create natural filters, they wrote.

"There's a lot of interest among some of the (estuary program) partners" in restoration projects, Lathrop said. "This was really just a first step toward identifying them." Just under 2,000 acres of barren areas and agricultural lands lying in the riparian zones could be candidates for restoration work, and about one-third of those acres lie in the most seriously affected sub-watersheds, the report says.

The digital analysis of land use along riparian zones shows the stream bank areas were most altered in the Beaver Dam Creek, Metedeconk River, Kettle Creek and Silver Bay sub-watersheds in northern Ocean County.

Land changes since 1995 are most concentrated in the northern municipalities of Toms River, Lakewood, Jackson and Manchester, a quadrangle identified in an earlier 2001 Rutgers analysis as the epicenter for the county's population growth through the 2020s.

There's been substantial growth to the south also, in designated Pinelands regional growth areas of Stafford and Barnegat.
