

New Science Feeds Debate Over Blue Hill Aquaculture

By James Straub

BLUE HILL—Debate over the sustainability of finfish aquaculture in Blue Hill Bay continues in public discussions and increasingly under the microscope of scientific study.



Hardwood Island serves as a backdrop for Erick Swanson's salmon pens in Blue Hill Bay.



Jon Lewis, director of aquaculture environmental monitoring for the

Department of Marine Resources, takes a reading of dissolved oxygen levels near salmon pens off Hardwood Island in Blue Hill Bay.
STAFF PHOTO BY JAMES STRAUB

The presence of one salmon farm and the possibility of others to follow has recently made the bay a focus of statewide political and scientific debate on the contentious practice of salmon farming.

Concerns about the health of the bay and the possible adverse effects from aquaculture have led to two formal studies and additional monitoring by an aquaculture lease holder.

The Friends of Blue Hill Bay hired University of Maine oceanographer Neal Pettigrew in 1999 to conduct one study. Don Eley, a member of the Friends group, said Pettigrew's research focuses on currents and how they affect the time pollutants remain in the bay.

Later in 1999, the Department of Marine Resources launched its own study aimed at understanding the bay and developing best management practices for fish farming.

John Sowles, director of the DMR's ecology division, said the study came in response to a "red flag" that went up in 1998 during review of an application from Atlantic Salmon of Maine for an aquaculture lease to raise salmon in pens off the western side of Long Island in Blue Hill.

Sowles said the DMR denied the lease because the applicant had not proposed any measures to deal with the possibility that the salmon farm operations could further reduce the dissolved oxygen levels, which were already near the state's acceptable minimum levels.

An application from Erick Swanson to raise salmon in pens off the eastern side of Long Island was approved in March of 2000. Swanson has yet to start operations at the site because he is awaiting a federal discharge permit under the Clean Water Act, which he expects to receive in October.

Sowles said that application was approved because Swanson had included measurements for dealing with oxygen levels that fall below the state's minimum requirements.

Those measures include reducing the number of fish in the pens, removing the fish altogether or adding oxygen to the water to meet state requirements.

Eley said the Friends of Blue Hill Bay are uncomfortable with the arrangement because the oxygen levels could drop below the state's requirements but would not be immediately detected by the DMR.

The DMR began measuring oxygen levels in 1999. The following year, the study was extended to collect samples of nutrients in the water with the goal of establishing a nutrient baseline.

Data on dissolved oxygen levels, temperature, salinity and pH levels at various water depths are taken at 18 stations in the bay. The data collecting stations range from the outer edge of the bay to Blue Hill Harbor, including one station at Erick Swanson's active salmon farm lease site off Hardwood Island. Data has been gathered monthly during the summer over the last two years.

Sowles said one goal of the study is to quantify effects of existing salmon pens.

"We're trying to paint a picture of water-quality conditions in the bay," he said. "We want to know if they're changing, so we're establishing a baseline. We want to see the capacity of the bay to absorb nutrients from any source."

Because increased nutrient loading in the bay could result from salmon farm operations, Sowles said the DMR granted the lease off Long Island to Swanson with the understanding that the total number of salmon being raised in the bay would not increase. Swanson would divide the number of fish he now raises off Hardwood Island between the two sites.

"And that's the way it's going to stand until we figure out how much the bay can hold," Sowles said. "In my mind, we are proceeding with caution. We hold these concerns just as serious as they do, and we're addressing them."

Swanson has two other salmon farm lease applications for sites in Blue Hill Bay pending with the DMR. Sowles said that if the leases are approved, the number of salmon currently raised by Swanson would not increase.

Again the Friends of Blue Hill Bay are uncomfortable with the arrangement.

"If all permits are granted, they call for 2 million fish," Eley said. "They might have a verbal agreement not to increase the number of fish, but what is the impact of 2 million fish in the bay? Our concern is what's in black and white. Swanson could sell. Sowles could be out of a job. The permit says 2 million fish. This verbal agreement makes me nervous."

Sowles said while the limit on the number of fish Swanson can have in the bay isn't a written condition of his DMR permit it will be included in the language of his federal discharge permit.

Sowles said one goal of the DMR study is to record conditions around salmon pens in the context of the rest of the bay.

"If it's no different," he said, "it's hard to show any measurable impact. We'll never get a perfect answer. It's basically risk management."

The need for data goes beyond the needs of policymakers. Swanson monitors the waters in and around his Hardwood Island lease for his own information.

"I monitor to make sure we're not exceeding what's compatible with nature," He said.

Swanson said that early on he was seriously overfeeding the fish, and a lot of the feed was ending up on the bottom of the pens.

He adjusted the amount of food he was feeding the salmon to avoid the production of methane gas and hydrogen sulfide on the ocean bottom and to prevent health problems among his fish.

"It's bad news for the farmer," he said. "You don't want any gassing going on down there. We need early warning that the bottom is overloading with organisms."

Swanson dives twice a week to look for dead fish and inspect the waters. He also measures oxygen levels every day.

"My business relies on it," he said. "I need a clean bottom. A farm that's in compliance with the DMR and EPA is very productive. The amount of farming in Blue Hill Bay will be determined by disease management."