

Of fish and men

Shad, salmon restoration failure explained

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NEWFANE -- Is it the dam or is it the power plant that is responsible for the less-than-spectacular results of salmon and shad restoration efforts on the Connecticut River?

The Turners Falls Dam is the likely culprit, said a witness called by attorneys for Entergy, the owners of Vermont Yankee nuclear power plant.

"The fish passages have never been effective," said Larry Barnthouse, a scientist who for the last 40 years has studied the effects of power plants on the environment. He called the dam at Turners Falls "the major cause for the failure of the American shad restoration plan."

Barnthouse was called during the second day of hearings on whether the state's environmental court will approve an amended discharge permit for the power plant in Vernon.

The operators of the plant are asking the court to let them increase the overall temperature of the Connecticut River by 1 degree during the summer months by increasing the temperature of cooling water being released into the river.

The permit was originally approved by Vermont's Agency of Natural Resources, but was put on hold when environmental and anti-nuclear groups appealed on the grounds the increase would affect fish and wildlife.

Atlantic salmon began to disappear from the Connecticut River shortly after the Turners Falls Dam was built in 1792.

But starting in the 1970s, a salmon restoration project was begun, and each year since, adults have been removed from the wild and their eggs are harvested. Fry are then hatched and grown into parr which are released into the river.

While the number of natural salmon that return to spawn is between 2 and 4 percent, said Charles Coutant, a fisheries biologist called to the stand by Entergy attorneys, stocked fish have a return percentage "in the hundredths of a percentage."

"Fish get eaten and lots of other things happen to them."

Coutant, an expert on the effects of temperature on aquatic life who has worked on salmon restoration in the Pacific Northwest since 1989, blamed the low percentage of salmon in the river on "a multitude of problems" such as agriculture, the damming of the river, siltation of gravel river beds and deforestation.

Though shad and salmon have a very good chance of getting past the Vernon Dam, Barnthouse said in his testimony that many of the fish "are simply not able to make it up" past the Turners Falls Dam.

To demonstrate his point, Barnthouse showed the court a picture taken earlier this week of schools of shad -- which he called "would-be spawners" -- unable to get past the dam.

As far as temperature of the water stopping the fish at Turners Falls, "there is absolutely no evidence at all that Vermont Yankee discharge had any impact at all on the passage of shad at Turners Falls Dam," he said.

Between 1984 and 1988, he said, the plant was allowed to experiment with different "discharge regimes," said Barnthouse. And though temperatures were different from year to year, "it made no difference at all."

"Some of the years with the highest counts were the year when you had the highest discharge temperatures," he said, adding the lowest passage rate was recorded when the plant wasn't discharging cooling water at all.

The plant began operating under a new regime in 1991 and shad counts "didn't decline until well over five years after," said Barnthouse.

During his testimony, Barnthouse identified four likely causes for the decline in American shad -- thermal discharge from the plant, fishing or harvesting, striped bass predation and dam passage.

He said the data he analyzed showed "that since 1980, shad have not been overfished." There is some evidence though, he said, that

striped bass have been eating a large portion of shad as well as river herring since the early 1990s.

Though he said there was "no good confirmation" on how many shad a bass might eat, the increase in the bass population correlates to a decrease in both herring and shad.

As for why so few salmon pass the Vernon Dam, Coutant said that most of them are taken to have their eggs harvested at the Holyoke Dam.

"Only a small portion are allowed to finish their route," he said.

For every 100 fish collected last year, he said, 11 were released to continue their journeys upstream.

Pat Parenteau, representing the Connecticut River Watershed Council, asked Coutant if he thought a smolt study program would help make decisions like the one the environmental court has been tasked with making.

"I do," he said, but added "for the proceeding we are in now, it wouldn't be necessary to do that."

Because the smolt migration ends before June 15, when Entergy would like to increase discharge temperatures, "information you can gather on the smolt really doesn't count at this proceeding."

Still, he admitted, a smolt study could provide useful information.

"This study will fill some gaps?" asked Parenteau.

"Certainly that is the intent," said Coutant.

Parenteau asked Coutant if he could tell the court what effect the cumulative increases in water temperatures as a result of Vermont Yankee thermal discharge have had on the fish.

According to a similar study Coutant conducted on the Columbia River in the Pacific Northwest, "the duration of exposure of smolts going through those plumes was so rapid you wouldn't be able to determine any difference in the physiology or behavior of the fish," he said.

During the winter months, Vermont Yankee is allowed to increase the river temperature up to 13.4 degrees higher than its ambient temperature.

That time period, from October to May, overlaps with the time smolt are in the river, said Coutant.

Most of the fish pass through the lower Vernon Pool in two to four hours, said Coutant.

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