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**Study shows Natural Chinook in the Millions in NY's Salmon River**

Fisheries managers are excited but cautious about the finding that five to ten million Chinook salmon were naturally reproduced in the Salmon River in 2005. A five million- fish finding comes from a New York Sea Grant-funded project carried out by State University of New York College of Environmental Sciences and Forestry (SUNY ESF) graduate student Dustin Everitt. In fact, SUNY ESF Dean of Research Dr. Neil H. Ringler says, "The calculations are actually quite conservative, and the number of juvenile Chinook for 2005 could easily have been close to ten million fish." Everitt worked under the guidance of Ringler, assisted by Michael Connerton, and with hydroacoustic analysis expertise from Cornell University's Dr. Lars Rudstam.

New York Sea Grant Fisheries Specialist David B. MacNeill says the finding comes after a litany of meaningful research conducted on the Salmon River by SUNY ESF, the New York State Department of Environmental Conservation (NYSDEC), the U.S. Geological Survey (USGS) and New York Sea Grant since the late 1970s.

"The good news now is that the Salmon River obviously has good habitat for natural spawning, but this number of naturally-produced salmon may create additional pressure on prey fish populations. More research is needed to better understand how many of the wild fish are surviving to 'fishable' size," MacNeill says.

The NYSDEC and USGS began conducting an annual seining (netting) fish index count on the Salmon River in 1999. NYSDEC Regional Fisheries Manager Daniel Bishop says the potential for the Salmon River to naturally produce Chinook salmon began to improve in 1997.

"We have seen naturally-spawned Chinook in the Salmon River since the late 1990s, when a stable year-round water flow on the River was instituted by the power companies. Before that the flow would be shut off at night and leave the River 'high and dry'," Bishop says.

Ringler says, "Because of the stabilized flows in the Salmon River, the magnitude of reproduction is far higher today than during our initial studies (30 years ago). The recognition that wild fish matter will greatly enhance future management decisions in Great Lakes fisheries."

"Using a seining technique at four stations in recent years, we could say that there were a lot of wild fish in the River," says James Johnson, a USGS fisheries researcher, "but we needed the more detailed assessment that Dr. Ringler and Dustin Everitt undertook to actually quantify the number."

Bishop notes that all five million of the naturally-spawned fish will not make it out of the River that is the largest cold water tributary to Lake Ontario. Still, he says, "These natural Chinook have the potential to have an extremely significant impact on the numbers of adult stock in Lake Ontario and on the long-term sustainability of the lake and river fishery. Their survival could depend upon an historical low level of the prey fish, alewife."

The researchers all say the next step is to collect adult Chinook from Lake Ontario, the Salmon River and the Hatchery to assess their survival rate. Johnson notes that the wild fish can be as much as one-third smaller than the stocked fish entering the Lake.

At Cape Vincent, NYSDEC Lake Ontario Unit Leader Steve LaPan says the NYSDEC and SUNY ESF are now cooperating on another Sea Grant project using microanalysis of fish scales to distinguish the wild Chinook from stocked salmon in Lake Ontario, a technique also being assessed by Canadian fisheries managers.

"This technique analyzes the rings on fish scales to assess differences in growth at early life stages, similar to counting the rings of a tree trunk. Wild versus hatchery-raised fish are thought to grow differently so we are evaluating this

technique as a way to count the two populations,” LaPan explains. He cautions, however, “One year’s data will not provide a definitive snapshot. Survival rates vary year to year. Counts could be ten percent one year and eighty-five percent the next depending on many factors in the fishery.”

Johnson, who, as Dr. Ringler’s first student, discovered Pacific salmon in the Salmon River’s tributaries, says, “Fisheries managers in Michigan conducted a marked fish survey and were shocked at the high survival rate of wild salmon in their fisheries. The five million count of young natural Chinook in the Salmon River has our attention in New York so that we are now ready to look at marking hatchery-raised fish so we can scientifically calculate a relative survival rate of the wild salmon compared with the stocked salmon. We will probably need at least two years’ worth of comparison counts before we can get excited here.”

The NYSDEC Salmon River Fish Hatchery at Altmar and Caledonia Fish Hatchery produces 1.8 million Chinook salmon each year from eggs collected from wild broodstock that return to the Salmon River to spawn. The young fish are hand fed, monitored daily for health problems, and later released into Lake Ontario.

Salmon River Program Coordinator Fran Verdoliva says Chinook salmon are unique in that they do not require two years of residence in the River before they grow large enough to enter the Lake.

“The Chinook spawn in October and the fry are ready to go to the lake in June or July. With the regulated water flow, the River is now more functional for spawning and for juvenile fish survival. The question is how many of the wild fish will survive in the lake and return here to spawn their own young,” Verdoliva says.

Another of Dr. Ringler’s SUNY ESF students, Mary Penney, is finishing her master’s thesis on the Salmon River’s critical habitat factors for wild salmon survival. Penney, the Stewards Program Coordinator with New York Sea Grant, says analysis is underway on such factors as water depth, temperature, velocity, and river bottom substrate.

“This research adds to the work that Dr. Ringler and his students have conducted for many years by providing the first study and the baseline data on the water conditions that wild salmon need to survive,” Penney says.

“The information from both studies coupled with past and current research provides sportfishery stakeholders with valuable information in support of a pastime and a livelihood that has a positive impact on New York’s freshwater shoreline economy,” MacNeill says.

The 2001 New York Sea Grant report on “The Economic Contributions of the Sport Fishing, Commercial Fishing, and Seafood Industries to New York State measures the value of freshwater recreational fishing at \$2.3 billion and nearly 11,000 jobs. # # #