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CHARACTERISTICS OF WILD AND HATCHERY-RELEASED ATLANTIC SALMON (*SALMO SALAR*) SMOLT MIGRATION IN THE GASPEREAU RIVER, NOVA SCOTIA

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Hundreds of thousands of Atlantic salmon (*Salmo salar*) have been released into inner Bay of Fundy (iBoF) rivers in an attempt to re-establish the endangered iBoF population, which is considered genetically unique. Migration is a key element in the life history strategy of Atlantic



salmon, and the metamorphosis from parr to smolt is essential for survival and growth in estuaries and the open sea. Many environmental factors have been linked to smoltification and migration in Atlantic salmon, including photoperiod, water temperature, and flow rate, and localized adaptations to these factors occur in salmon stocks within individual rivers. The 2007-2009 smolt runs in the Gaspereau River, Nova Scotia were examined to investigate characteristics of the migration, as well as to compare the migration patterns of wild and hatchery-released individuals. It was found that 50% of the smolt run occurred between water temperatures of 10-12°C, and the proportion of migrating hatchery-released smolts significantly increased ($p < 0.01$) as water temperature increased. Measurements of 553 smolts revealed that hatchery-released smolts were significantly smaller ($p < 0.01$) than wild smolts. Both the length and weight of hatchery-released smolts significantly increased ($p < 0.01$) over the migration period, while neither significantly changed in wild smolts ($p = 0.721$, $p = 0.061$). As well, condition factors of hatchery-released smolts were found to significantly vary ($p < 0.01$) during migration. It was noted that over 13% of the total 23,625 parr released in the fall of 2008 smoltified at a very small size. Possible explanations for this phenomenon are explored, as well as its implications on smolt survival and hatchery-release strategies.

Danielle Quinn graduated from Kennebecasis Valley High School in Quispamsis, New Brunswick, in 2005, and is currently completing her Honours thesis in her fifth year Biology at Acadia. Her primary interests are in fisheries ecology and management, particularly in regards to species which migrate long distances in their lifetime, such as Atlantic salmon. Danielle's future plans include gaining work and field experience before entering an MSc program in 2011, at which time she hopes to continue her studies overseas.

