ABSTRACT FORMAT

ORAL presentation

Comparison of migratory urge and gill Na+, K+ -ATPase activity of Atlantic salmon *(Salmo salar)* smolts from Dennys and Penobscot River stocks

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Migratory urge and gill Na+, K+ -ATPase activity of Penobscot and Dennys River smolts were investigated simultaneously in a controlled hatchery environment. Smolts were tagged with Passive Integrated Transponders (PIT) and placed in behavioral evaluation tanks for a series of seven two-week long trials (n=30 new smolts*stock^{-1}*trial^{-1}) spanning the smolt migratory window (April-June). Non-lethal gill biopsies (McCormick 1993) were collected from each smolt at the start and end of each trial to measure gill enzyme activity. Dennys smolts had the same or higher mean Na+, K+ -ATPase activity than Penobscot smolts on all sample dates. The seasonal pattern of increase, peak, and decline in enzyme activity of Dennys smolts were temporally and quantitatively similar to Penobscot smolts. The dates of onset, peak, and reduction of downstream (with tank flow) movements were independent of stock but overall Penobscot smolts moved 15.5% more frequently. Smolt activity became increasingly diurnal during peak migration but most downstream movement (>59%) still occurred at night. Dennys smolts were slightly but significantly more nocturnal than Penobscot smolts during peak migration. Correlations between the frequency of downstream movement and gill Na+, K+ -ATPase activity were absent or weak for Penobscot and Dennys smolts.

References*:* McCormick, S.D. 1993. Can. J. Fish. Aquat. Sci. 50:656-658.

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